



American Forestry

VOLUME 29

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NUMBER 349

Our Forest Hunger

Forestry and Our Land Problem

Wild Fowl Lore

The Girl Behind The Fire Line

The Romantic Parasite

Pennsylvania's Alpine Club

The American Forestry Association

Washington, D. C.

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Declaration of Principles and Policy of the American Forestry Association

IT IS A VOLUNTARY organization for the incultation and spread of a forest policy on a scale adequate for our economic needs, and any person is eligible for membership.

IT IS INDEPENDENT, has no official connection with any Federal or State department or policy, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watershed; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people, that the census of 1913 shows our forests annually supply over one and a quarter billion dollars' worth of products;

employ 735,000 people; pay \$367,000,000 in wages; cover 850,000,000 acres unsuited for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions, that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

It Will Support These Policies

National and State Forests under Federal and State Ownership, administration, and management respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.

State activity by acquisition of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State, and fire protective agencies, and encouragement and extension individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquisition of waste lands for this purpose, and also planting by private owners, where profitable, and encouragement of natural regeneration.

Forest Taxation Reforms removing unjust burdens from owners of growing timber.

Closer Utilization in logging and manufacturing without loss to owners; aid to lumbermen in achieving this.

Cutting of Mature Timber where and as the domestic market demands it except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.

Equal protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

Classifications by experts of lands best suited for farming and those best suited for forestry; and liberal National and State appropriations for this work.

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

OVID M. BUTLER, Editor
L. M. CROMELIN, Assistant Editor

Vol. 29

JANUARY, 1923

No. 349

CONTENTS

The New Year.....	2	Editorial	33
Our Forest Hunger—Ovid M. Butler..	3	Interesting Paragraphs from the Chief Forester's Report	36
Forestry and Our Land Problem—Henry C. Wallace.....	14	Announcement of the Annual Meeting	37
With six illustrations		Indian Peeling in Western Yellow Pine—Walter J. Perry.....	38
Outlook for Forestry in Pennsylvania..	19	With one illustration	
With one illustration		Wildfowl Lore—R. W. Shufeldt.....	39
Reforestation of Bible Lands—Jane Hill	21	With sixteen illustrations	
With four illustrations		The Pennsylvania Alpine Club—Lewis Edwin Theiss	47
Forest Legislation in Quebec.....	22	With seven illustrations	
The Romantic Parasite—Lela Cole Kitson	23	Then and Now—John D. Guthrie.....	51
With four illustrations		With two illustrations	
The Regeneration of the Highlands—A. MacCallum Scott, M. P.....	25	Idle Lands in Louisiana.....	54
Tree Stories for Children—Paper Made from Trees—Mary Isabel Curtis....	26	Southern Forestry Congress to Meet..	58
The Girl Behind the Fire Line—Will C. Barnes	27	Greeley's Army of 22,000,000.....	60
With seven illustrations		The Marriage of the Pines.....	60
Scenes in the National Forests.....	32	With one illustration	
		Largest Flower in the World.....	61
		With one illustration	

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CHANGE OF ADDRESS

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The New Year

With this issue, *American Forestry* begins the New Year under new editorial management. Its first message to its readers is the old—and yet never old—message of the Yule log, which through countless ages has marked the changing years and symbolized the season of good cheer and brotherly Godspeed. This printed page, caste from the wood of the forest, is *American Forestry's* Yule log, carrying to you, good reader, the season's greetings. If its touch seems unduly cold, light it and its glow will be as bright as that of the hewn bolt.

Why those old barbarians of many centuries past, and the Christians following, chose the burning of a log as the symbol of the period of changing events, we of today do not know. But choose it they did. And it so happens that as the year nineteen-twenty-two shed its leaves, the tide of changing events set in for *American Forestry*. The Association's president, its secretary, and a number of its board of directors, all of whom have served the cause of forestry long and notably, decided to retire from active service in the affairs of the Association and to entrust its management to new hands.

Another month, and a new set of officers of the Association will have been elected. With whatever concern one may view changing directorates, it is comforting to know that the cause of American forestry has listed under its banner many men competent and willing to take up the torch of leadership. And the men elected this month will be leaders. There is no doubt as to that. They will be men who will labor and sacrifice to make the *American Forestry Association* the dominant, fighting force it should be in the perpetuation of American forests.

The task ahead! It is large. And yet it invites. The new year marks the beginning of a decade which will be packed full of vital and interesting events relating to American forests and the effort to give them their rightful place in the affairs of the nation. It promises to be the most important decade in our forest history. Public sentiment, long apathetic, is rumbling throughout the land like an approaching storm. For the full significance of forests in relation to our national need for raw wood, for recreation, for the perpetuation of fish and game, for the protection of our inland waterways, our industries and our agriculture, is rapidly being grasped by the new generation. And this growing sentiment is not unmingled with intolerance at the scant attention thus far given to our forest needs by State and national lawmakers.

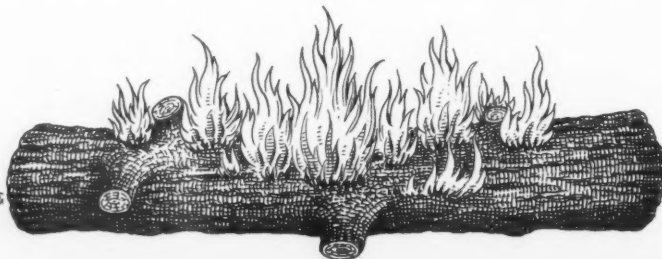
In this struggle, the *American Forestry Association* has a mission to fulfill. It is the mission of tempered leadership; the mission of bringing together the best thought of the best minds of those who have studied our forest problems; the mission of directing public sentiment along enlightened channels and of supplying it with the co-operative machinery with which to bring about the character of accomplishment best suited to the nation, the states and the communities.

It is the season of good endeavors. In building a bigger, a more aggressive and a more influential organization, your new officers will need help. They will need your help and your co-operation—all of you who believe in and love forests for any or all of the many ways in which they serve to make this a better, cleaner, and more prosperous country to live in. The opportunity is at hand—your opportunity—to help build up a national association so strong and so far-reaching that its support of desirable local developments as well as national measures in the field of forest perpetuation will bring quick and definite results. It will be done. Your help will hasten the fulfillment.

As for the *American Forestry Magazine*, it will strive faithfully to portray and aggressively to direct along sound lines the great development in forest interest now impending throughout the United States. It will in no wise assume the aspects or the text of a professional or technical magazine. Far from it. Written in popular style and beautifully illustrated, its articles will be from the leading writers in every field relating to the forest. They will tell you interesting and instructive things about trees and the uses of wood, tree planting in field and on roadside, wild animals and plants of the forest, State and national forests and parks, forest recreation, memorial trees, the progress of forestry at home and abroad. They will tell you interesting things which people are doing with trees and for the cause of forestry. And each month there will be a popularly written article on some economic phase of our forest problem.

In short, good reader, the pages of *American Forestry* will bring under your reading lamp for you and your children, in story and in picture, the forest in all its vital and enchanting variety.

THE EDITOR



AMERICAN FORESTRY

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Our Forest Hunger

By OVID M. BUTLER

THE train was winding through a ravine of the Western Mountains. On both sides the land sloped steeply upward and shut out all view of the sky from those within the cars. The slopes, once green with dense forests, were now a forbidding wreckage of high stumps and tangled brush, blackened by the poisoning tongues of forest fires. Three men silently smoked their after-dinner cigars in the smoking compartment of the rear coach. The dry goods merchant from Portland, his attention suddenly arrested, leaned forward and peered upward through the window.

"Devastation personified!" he exclaimed. The drummer from the East turned upon him with silent but appraising scrutiny.

"What of it?" he said finally. "The land is good for nothing."

"It will grow timber," ventured the man from Portland.

"In a hundred years—yes, but who wants to wait a hundred years?" The drummer violently knocked the ashes from his cigar. "Back East in my State," he continued, "a crowd of theorists are going crazy over this forest question. They're bugs on it. Why, they are agitating a bond issue from which the State will buy up great tracts of land and plant them in forests. That's all foolishness. Suppose our forests do give out! What of it? It wouldn't affect you or me or this gentleman on my left enough for us to notice it. Leave it to American inge-

nuity. It will provide the necessary substitutes for wood."

The man on the drummer's left leaned forward and fixed a pair of keen black eyes upon the speaker. "Pardon me," he said politely, "since you have involved me in your statement, I feel constrained to tell you that you don't know what you are talking about."

"That's speaking out in meeting, to say the least," rejoined the drummer, testily. "Nevertheless, I reassert

that I could be deprived of wood tomorrow and for the rest of my life and miss it no more than a lot of this patent breakfast food."

"My friend," replied the other, who apparently was an economist, "if you are speaking only of yourself, I have no interest in pursuing the argument, but if you are speaking of the average American citizen, I take issue."

"Well, for the sake of argument, make it the average

American citizen," rejoined the drummer, cockily.

"The average American citizen," continued the economist, "deprived of wood would be the unhappiest creature in the world. His whole life, social and industrial, is molded and influenced by free access to and abundant use of the forests and forest products. Let us begin with his home. Whether it is built entirely of lumber or in part of brick, tile, stone, stucco, or something else, it is steeped in wood—wooden floors, wooden finish, wooden millwork, wooden furniture, wooden picture frames, and



"DEVASTATION PERSONIFIED!" EXCLAIMED THE MERCHANT FROM PORTLAND. "WHAT OF IT?" REPLIED THE DRUMMER, "THE LAND IS GOOD FOR NOTHING." BUT THE DRUMMER CHANGED HIS MIND

so on down to the keys of his piano and the records of his phonograph."

"The records of his phonograph?" said the drummer, skeptically.

"Yes, they are sixty per cent wood. The paint on his house, inside and out, contains turpentine from southern pines. The paper on its walls is made from spruce or hemlock. The linoleum on the kitchen floor is made in part of wood flour. His house is lighted by electricity brought to him by wires strung on wooden poles. In winter it is heated by coal, in the mining of which great quantities of timber are used each year."

The drummer bit his cigar and crossed his knees uneasily.

"This average American citizen sleeps in a wooden bed or under blankets in the manufacture of which the wooden shuttle is indispensable," went on the economist. "Arising in the morning, he washes with soap containing a forest product. It is a fair assumption that he puts on at least one garment, hose, necktie or underwear—manufactured from the fiber of wood. He pulls on shoes, the leather of which has been tanned with tannic acid from chestnut wood or hemlock bark. Those shoes have been made over a maple shoe last. He brushes his hair—be it ever so little—with a wooden-handled brush and then proceeds to breakfast, where he sits upon a wooden chair at a wooden table and partakes of food which has been shipped in boxes, made of wood or wood fiber—"

"I've heard that line before," interrupted the drummer, intolerantly.

"Do you know, my friend, how many wooden boxes it requires annually to satisfy this nation's hunger for citrus fruit and apples?" the other asked bluntly.

"Can't say that I do," grunted the drummer.

"Over fifty million! Place those boxes end to end and they would reach from New York to San Francisco and back again three times. They contain enough lumber to build 15,000 homes every year, or a city of 75,000 population.

"Think of it!" exclaimed the merchant from Portland.

"But to return to our average American citizen and

his breakfast orange," the economist continued. "His wife permitting, he reads the daily news of the world from a paper made of wood pulp, printed with ink containing a forest product and reproducing despatches which have traveled over hundreds of miles of wires supported by wooden telegraph poles. Breakfast over, he lights his cigar or cigarette with a wooden match struck on a wooden box, kisses his wife good-bye and puts on his hat which has been shaped over a poplar hat block. He steps out to his automobile, in the manufacture of which some five hundred board feet of ash, hickory,

maple, birch, gum, oak, or pine have been consumed, and he proceeds to work. If not sufficiently prosperous to own an automobile, he boards a street car or a train, in the making of which wood is largely used. The track on which the car or train runs is laid on wooden ties. Settled in his office, he is still in continual contact with wood—wooden office trimmings, desks, chairs, lead pencils, and letters and reports typed on paper made of the forests. Late in the afternoon he goes out for his daily recreation—golf, baseball, tennis, polo, billiards, bowling or shooting—it doesn't matter what the sport, the forest serves to satisfy his appetite."

"I don't know about that," interrupted the drummer. "My own particular hobby is horseback riding."

"In which event"—the economist puffed hard to revive his cigar—"your saddle is built on a wooden saddle tree—probably beech from Indiana."

The drummer was conscious of a stifled laugh

from the man from Portland.

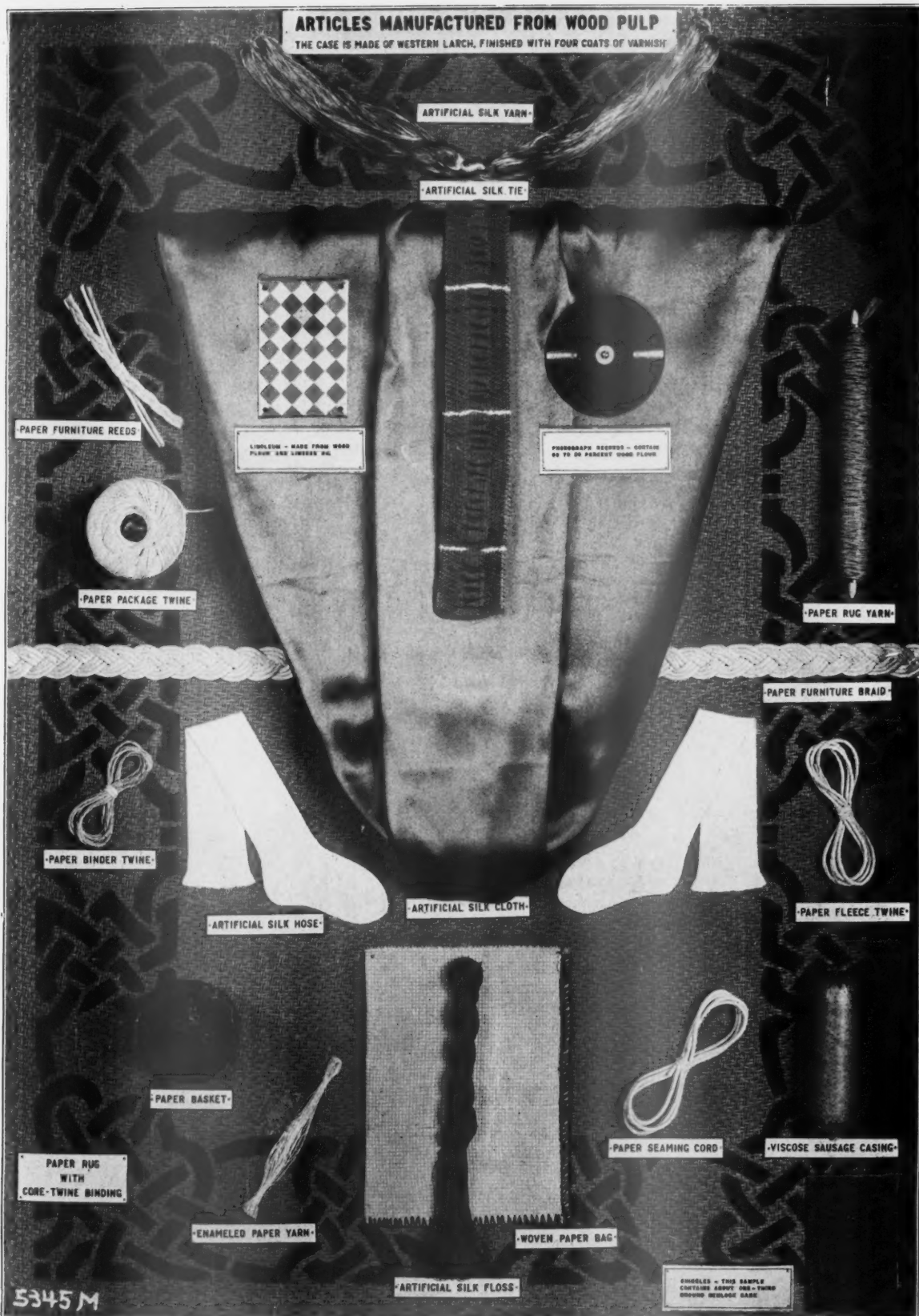
"Your average American citizen returns home to dinner," continued the economist. "It is a cool fall day, we will say. A cheerful wood fire in the grate greets him, at which he warms himself and then looks up the children. They are at play with their toys, most of which are made in whole or in part of wood. A child's nursery, by the way, is the most beautiful expression of forest bounty of which I can think. After dinner, he and his wife go to the theater—a movie or a play set to harmonious music, which comes for the most part from instruments



MANY HANDS ARE EMPLOYED, YEAR IN AND YEAR OUT, MAKING DOLLS FOR "OUR LITTLE MOTHERS." IN THIS FACTORY THE DOLLS ARE MADE ENTIRELY OF WOOD—EXCEPTING HAIR AND EYES—AND THEY ARE BUT ONE OF HUNDREDS OF TOYS WHICH THE FORESTS FURNISH FOR THE DELIGHT OF OUR CHILDREN

ARTICLES MANUFACTURED FROM WOOD PULP

THE CASE IS MADE OF WESTERN LARCH, FINISHED WITH FOUR COATS OF VARNISH



THE MARVELOUS RESPONSE OF THE FOREST TO THE PROCESSES WHICH UNLOCKED THE SECRETS OF ISOLATING WOOD FIBER AND REBUILDING IT INTO A PLIABLE PULP WITH WHICH TO SERVE MAN IN SCORES OF DIFFERENT WAYS, IS BUT ONE ALADDIN-LIKE ADVENTURE IN OUR EXPLORATION OF THE FOREST CUPBOARD. JUST A FEW EXAMPLES OF THE HUNDREDS OF FORMS IN WHICH WOOD ENTERS OUR DAILY LIVES ARE GIVEN HERE. ENOUGH, HOWEVER, TO PROVE, EVEN TO THE MOST SKEPTICAL, THE GENEROUS SERVICE OF THE FOREST TO MAN

in the making of which wood is essential. Furthermore, the film which makes the motion picture possible is made in part of products obtainable only from the forest."

"There," exclaimed the merchant from Portland, slapping the drummer on the knee, "can you beat it?"

"You forget the substitutes," said the drummer, weakly.

"Substitutes? Yes, there are a lot of so-called substitutes for wood," replied the economist. "Some are better than wood for special purposes, but a majority of them are either not so good or not so cheap. All of them taken together make a poor showing against the growing diversity of our demands upon the forest cupboard. I believe that no other material will ever be found which will serve mankind in the multitudinous ways that the forest serves him. You say, let the forests be exhausted because substitutes will be found! You can with more reason say, let the rolling stock of our railroads be used without replacements, because when the railroads have gone to pot, American ingenuity will devise some other system of transportation. American ingenuity, working overtime, has thus far failed to develop a successful substitute for the wooden railroad tie which today is the foundation upon which the transportation system and with it the prosperity of this country rests."

The drummer started to reply, but hesitated.

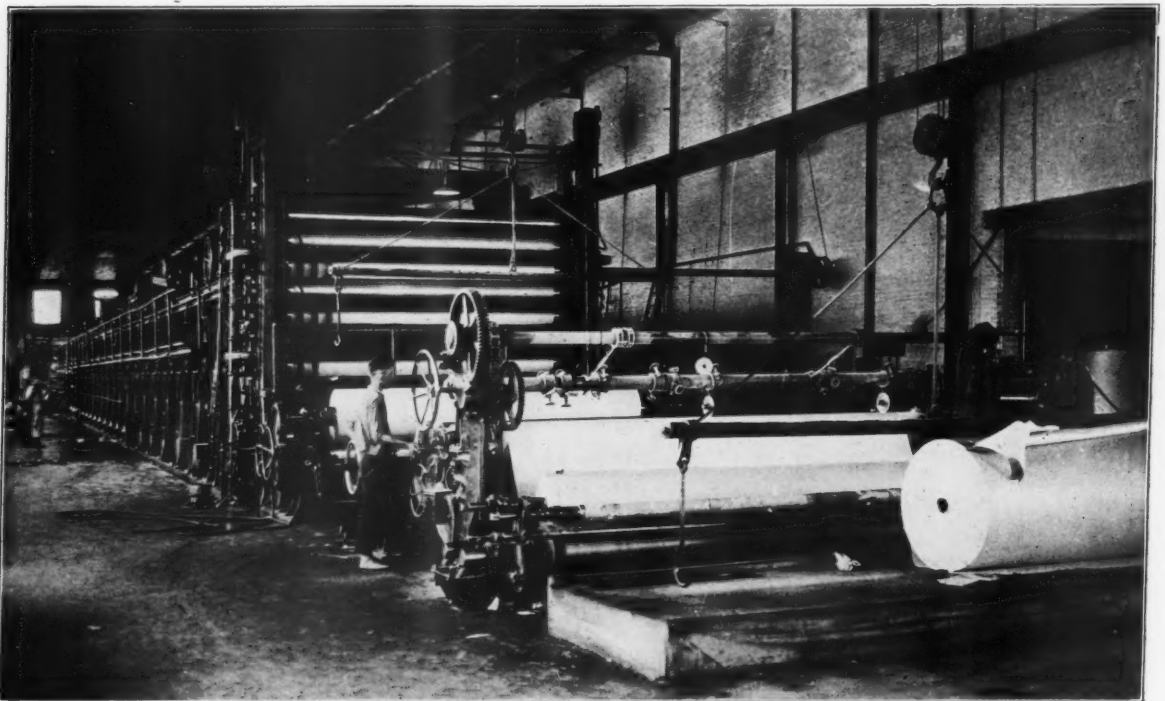
"Just a minute," interjected the economist. "You speak of substitutes. It is not a problem of substitutes. It is a question of maintaining intact the foundation upon which American business has been and still is built. What about the innumerable industries reachin-

into every State in the union, engaged in making all these things and hundreds of others from the forests? What of their investments aggregating billions of dollars? What of the banks which are carrying their loans? What of the wage-earners—over a million and a quarter of them—skilled in the forest and woodworking trades? What of their five or six million dependents? Without forests, what would you do with these wood-consuming industries? You cannot make concrete with the equipment of a furniture factory, or steel with that of a mill-work plant, or brick with the machinery of a box factory. What about the ever-growing area of deforested and fire-devastated land—upwards of 325 million acres—which in many regions are actually bankrupting once prosperous communities? I presume that the prostration of sixty or seventy industries throughout the country, which are built upon the primary use of wood, together with disrupted manufacture, causing many more industries which must have wood in secondary ways, would in no wise affect your business, whatever it may be?"

The drummer remained uncomfortably silent.

"It would mean industrial chaos," declared the economist, somewhat warmly. "And yet you say, in effect, let the forests be cut and burned in reckless heed of the morrow, for when they are gone we will never miss them."

The drummer capitulated and admitted that he had never thought of the forests in exactly that way. The economist did not overstate his case. He understated it in that he did not begin to cover the innumerable ways in which the forest has underwritten our homes, our cus-

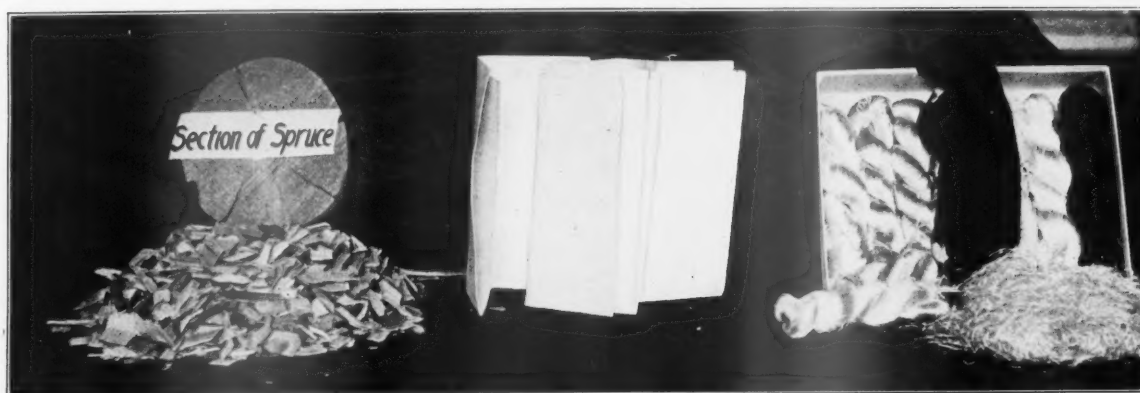


A MODERN PAPER MACHINE, TYPICAL OF THOSE THROUGH WHICH THOUSANDS OF ACRES OF FOREST PASS EVERY YEAR IN ORDER TO SATISFY OUR HUNGER FOR NEWSPAPERS, WHICH REACHES THE STAGGERING TOTAL OF 28,000,000 COPIES DAILY, REQUIRING THE CUTTING OF ALMOST ONE AND A HALF MILLION ACRES OF TIMBER ANNUALLY

toms, our industries, our happiness, and our prosperity. About all our forefathers got out of the forest cupboard was rough planks and firewood. They had no conception of the vast storehouse of potential products hidden away in the darkly flanked forests which stretched from the Atlantic coast westward they knew not how far. But decade by decade, the necessity of American progress and American comfort, driving forward under a lucky star of bountiful woods, has wrested one secret after another from the forest, until today ours is a nation enslaved socially and commercially to a forest appetite unparalleled in the history of nations.

We Americans have no conception of our forest hunger, because our constantly expanding appetites for the products of the forest have not yet been denied. We have been so abundantly fed upon nature-grown forests that we have come to think that wood is as unlimited as

a great and apparently inexhaustible source of cheap paper. Forty years ago our newspapers were made almost entirely from rags. Rag stock was not plentiful and mill prices of newsprint paper were \$7.00 and \$7.50 a hundred pounds—an outrageous price compared to newsprint prices of 1914. Consequently, newspapers were something of a luxury and we got along on an average per capita consumption of newsprint paper of three pounds a year. It was then that the forests began to yield to the alchemy of the chemists, and the sulphite and ground-wood processes of wood pulp manufacture gradually became established. From that time on, the price of newsprint steadily declined until in 1897 it was less than \$2 a hundred pounds and America was getting its evening and morning papers at one and two cents a copy. From 1897 to the beginning of the war the price of newsprint continued to fluctuate around \$2 a hundred



(Photograph by courtesy of the New York State College of Forestry.)

THE WORK OF THE SILK WORM IS NO MORE WONDERFUL THAN THAT OF MAN IN CONVERTING THE TRUNK OF A TREE INTO A SILK OF EQUAL SHEEN. WHAT FUTURE VALUES ARE HIDDEN WITHIN THE BARK OF LIVING TREES IS A STORY NOT YET TOLD BECAUSE OUR KNOWLEDGE OF WOOD CELLULOSE IS YET IN ITS INFANCY

the climate. If forests were used to build houses only, the case would be bad enough, as any one will concede who has studied the standards of home comfort and culture in European countries, where lumber starvation looks out of almost every window. But we have built up a national appetite for raw wood alone in more than fifteen hundred different forms, while our expanding consumption of the forest in converted or chemical forms is one of the marvels of the age. What future values lie hidden in those wonderful laboratories which nature has wrought inside the bark of living trees is a story not yet told.

Today the whole tendency in our national struggle is to drain our forests by developing more and greater uses for wood—a natural and desirable progress provided our forest renewals were keeping pace with our inordinate wood appetites. But they are not. On the other hand, our progress in extracting products of value from the forests is comparable to the story of Aladdin and his wonderful lamp:

Consider the far-reaching influence upon our social and commercial lives of the discovery, after twenty centuries of wood-using civilization, that the forest was

pounds until there was being issued daily in this country an average of one newspaper for every family in the land.

In the form of raw wood there is not a home in the country which this question of the forest cupboard does not reach. Here again in the form of paper it touches every heart and every business. It touches not only those who read, but those engaged in the processes by which the paper is made, those who gather and edit the news, those who print it, the boys in the street who sell the papers, the men and women in the stores who sell the books and magazines, and the great army of advertisers who pay almost a billion dollars annually for space in the daily papers and the periodicals.

In addition to newsprint and book papers, tons and tons of kraft and wrapping paper are supplied every year by the forests. Scarcely a package or bundle enters our home that is not wrapped in wood pulp in the form either of a paper sheet or a paper bag.

But these are by no means the only products made from wood pulp. There are scores of others—things we see and use daily, but which our minds do not associate with the forest because so few of us know that they are forest

products. Of boxes or containers, there is an infinite odd lot, beginning with those the size of half a dollar, in which you carry home in your vest pocket a supply of quinine capsules, and extending through the box kingdom to trunks and great shipping containers used in shipping commodities weighing a hundred pounds and more.

At Christmas, our homes are filled with cardboard boxes, dressed in seasonal garb and radiating delicious mystery. The sight and smell of Christmas trees of pine, spruce, or fir awaken sparks of forest blessings in our hearts, but the million of boxes which do homage at the bases of the trees or hang upon their

lighted branches are forest bounties largely unrecognized and unappreciated. In hundreds of other little utility ways the forest passes through our hands or before our eyes. Most of the tickets, calendars, advertising posters, and cards, as variegated as the autumn foliage, are forest-given products. Whether we go to the movie or book

ourselves for a trip to Alaska, a wood-pulp ticket is probably our passport.

Automobiles are making us more and more a nation of picknickers and if there are any wayfarers who have not yet discovered the convenience of the fiber plate, with its companion pieces of fiber spoon, drinking cup,

napkin and table cloth, they have missed the nub of the simple life. And then what is more useful than a piece of string, especially when you are without it! The forest supplies a great variety of twines. Some have a core of hemp or similar material; others are made entirely of wood pulp. They run the scale from wrapping

twines to clothes lines, driving reins, and shipping ropes an inch or more in diameter.

Often confused with reed furniture, there has come on to the market in increasing amounts in the past ten or fifteen years, a great variety of fiber furniture. It is made from the forest by that same wonderful process



IN THESE HOUSES, WHICH LOOK LIKE THEY MIGHT HAVE BEEN BUILT BY ESQUIMOS, THE FOREST IS REDUCED TO CHARCOAL, AN IMPORTANT MATERIAL IN THE MANUFACTURE OF CHARCOAL IRON, BLACK POWDER, POULTRY FOODS, AND A LARGE NUMBER OF OTHER MISCELLANEOUS THINGS



THIS IS A WOOD-PILE AT AN IRON MINE. WHEN WE SPEND A PENNY, OR SHOVEL COAL IN OUR FURNACES, OR WHEN AN ELEVATOR SHOOT US UP FLOOR AFTER FLOOR IN A STRUCTURAL-STEEL SKYSCRAPER, WE ARE SELDOM CONSCIOUS OF THE FACT THAT THE FOREST HAS PLAYED ITS PART IN THE ACCOMPLISHMENT OF THESE THINGS. NEVERTHELESS, HUNDREDS OF THOUSANDS OF CORDS OF WOOD ARE USED ANNUALLY IN THE MINING OF COPPER, COAL, AND IRON

by which wood is converted into a pulp of a thousand uses. Fiber furniture comes in practically any form desired, from sewing baskets to breakfast sets! Thence the forest skein leads to wood-fiber rugs, matting, carpets, tapestries, hangings, and linings, woven from fiber yarn into almost any combination of colors, shapes, and designs. More and more the forest is coming to be used to decorate our homes and clothe our bodies. It is a gambler's chance that the first pair of silk-clad ankles you meet in the morning on the way to the office are wearing raiment fabricated from wood.

For many years charcoal has been used as an ingredient

The marvelous response of the forests to the processes which unlocked the secrets of isolating wood fiber and rebuilding it into a pliable pulp with which to serve man in scores of different ways, is but one Aladdin-like adventure in our exploration of the forest cupboard. Other and different processes have brought forth treasures no less wonderful. There is the process of wood distillation by which the forest is made to yield many valuable products. In the old days the charcoal kiln was a common sight in our forest communities. Our early ancestors little suspected that they were getting the least valuable product out of the wood, because they did not know



(Photograph by courtesy of Woodward & Lothrop, Washington, D. C.)

THERE HAS COME ON TO THE MARKET IN INCREASING AMOUNTS IN THE PAST TEN YEARS A GREAT VARIETY OF BEAUTIFUL FIBER FURNITURE, MADE FROM THE FOREST BY THE SAME WONDER PROCESS BY WHICH WOOD IS CONVERTED INTO A PULP OF A THOUSAND USES, AND IN THIS FURNITURE BEAUTY, UTILITY, AND COMFORT ARE COMBINED. SCIENTIFICALLY CONSTRUCTED, IT WILL OUTWEAR MANY OF THE CHEAPER GRADES OF WOODEN FURNITURE

in the manufacture of black powder, but the general suitability of the forests as a source of nitrocellulose has been a much-mooted question. It had not been given a great deal of consideration until the war with Germany stirred us up. With a shortage of cotton staring us in the face, we got busy and found out something which no one has said much about, but which is worth bearing in mind. We found out that in time of war our forests are a second line of defense as a source of nitrocellulose for high-power explosives. Cotton, of course, comes first, mainly because the price of cotton linters has been so low, but should we ever become involved in another war and our cotton crop fail us, our forests could fill the gap in supplying nitrocellulose without a gun growing cold.

that the more valuable products were passing off in the smoke.

Wood alcohol, acetate of lime, wood oils, wood tars, and charcoal—the chief products of wood distillation—may not sound like articles of every-day democracy, but nevertheless there are few days in our lives that some of them do not touch us in one way or another. Wood alcohol is used all over the world. It has gained new uses rapidly. More than 10,000,000 gallons produced annually in this country go into the manufacture of such articles as photographic films, celluloid, formaldehyde, dyestuffs, paints and varnishes, gas mantels, fine soaps, and denatured ethyl alcohol. Motion-picture films are laying an increasing toll upon wood alcohol, as is the post-war

development of the dye industry in this country.

Ask the chemist why the shortage of formaldehyde at the close of the war and he will tell you it was because of a shortage of wood alcohol, which is the only substance that can be converted into formaldehyde commercially. We are pretty much dependent on formaldehyde. A great many thousand people owe their lives to it because it ranks next to sunshine in destroying disease germs. Doctors will tell you that in hundreds of thousands of homes, where persons have died of contagious diseases, the lives of other members of the family have been protected by proper disinfection with formaldehyde. But it doesn't much matter how good our health may be, we sooner or later must resign in its favor, because it is used almost exclusively by our friends, the undertakers, in embalming the dead.

If you pursue further the uses of this forest product, formaldehyde, you will sooner or later find yourself face to face with the greatest wood user in the world, the American farmer. He will be able to tell you how dependent on the forests he is for wood for barns, sheds, pig-pens, egg crates, silos, wagons, implements, kitchen utensils, and so on, but there is not one out of a hundred probably who will admit that the forest has anything to do with how many bushels of wheat, oats, or barley he raises to the acre or the price he receives a bushel when the sweat and dust of threshing time are over.

Nevertheless it has—a great deal—and the reason lies in the fact that formaldehyde has been found to be the most convenient and effective fungicide known for the treatment of seed grain against the cereal smuts—those insidious fungous parasites which have been robbing the American farmer and his customers, the American public, of some one hundred million bushels of grain annually.

That we may, within the not distant future, run our automobiles on a motive fuel furnished by the forest is by no means impossible. Forward looking automotive engineers in this country are seriously studying the forest as one of several possible sources of motive fuel. The forest product they are thinking about and figuring upon

is alcohol—not wood alcohol, which has already been mentioned as a product of hardwood distillation, but real grain alcohol of the identical chemical composition of that made from grain and potatoes.

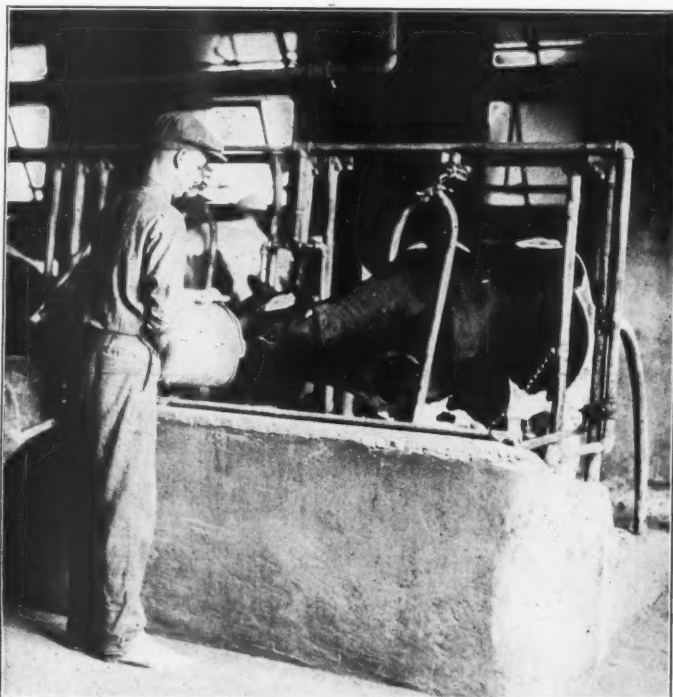
The production of ethyl (grain) alcohol from wood is based upon the hydrolysis of wood cellulose, which with certain species gives rise to about 20 to 25 per cent of sugar. From very recent experiments, it looks now as if this process of hydrolizing wood is going to uncover some startling new treasures from the dark recesses of the forest cupboard. These experiments have indicated that instead of ethyl alcohol, presto change! a good grade of cattle food may be produced. This is accomplished

by certain alterations in methods of treating the hydrolized wood, whereby the sugar produced is made use of as a carbohydrate food in a form which not only appeals to the appetite of the bovine but apparently is quite efficacious in producing beef and butter fat.

In justice to the forest, the writer is compelled, even at the risk of outright skepticism on the part of some readers, to introduce our own stomachs to the forest cupboard. A few years ago, a chemist at the Forest Products Laboratory, at Madison, carried home in his pocket one evening a bottle containing a fine white powder. This he presented to his wife with the request that she prepare hot

biscuits for their evening meal and that she substitute the powder in the bottle for her regular brand of baking powder. When the biscuits appeared on the table, they were the equal in both appearance and taste of biscuits made from the best commercial baking powders on the market.

What the chemists at this laboratory had done was to make a baking powder from wood. By leaching small chips of western larch in water, they had obtained a high yield of galactan, a water-soluble gum which never before had been found in sufficient quantities to be of any commercial importance. The galactan, when oxidized with nitric acid, produced mucic acid and the chemists knew that mucic acid should be equal, if not superior, to tartaric acid for baking powder. The proof of the



THE ONLY WOOD IN THIS PICTURE IS IN THE BUCKET. IT IS A CARBOHYDRATED CATTLE FOOD, MADE FROM HYDROLIZED WOOD. NOTE HOW IT APPEALS TO THE APPETITE OF THE COW! AND IT HAS BEEN PROVEN QUITE EFFICACIOUS IN PRODUCING BEEF AND BUTTER FAT

pudding was, to the chemist in question at least, in the eating.

Today there is under operation in the larch region of the West a large plant utilizing larch wood for the commercial production of mucic acid—a product of high purity suitable for the making of both baking powder and artificial fruit flavors. Another wood industry in the making!

Undisturbed by science for more than three centuries, there has developed in this country a secondary forest industry which today leads the world in the value and volume of its products. It predates the lumber industry proper. It is called the naval-stores industry—a name which clings to it from the days when its products were used almost exclusively in ships and on the seas. Today naval-stores are mainly land-used commodities and as such permeate our daily existence in a greater variety of ways than any other forest product, excepting raw wood.

More than half of our production of naval stores—rosin and turpentine—is exported, the United States

leading the world, not only in production but in the amount of exports. Before the war, our exports of both rosin and turpentine were greater than the combined exports of all other countries.

Few Americans have any conception of the great variety of ways in which they make use of these two forest products. To type single spaced a list of all its uses requires more than two pages of letter-size paper. Its most important use is in the manufacture of soap. More rosin is consumed in our family wash-tubs than in any other way, because rosin washing soaps are principally of the laundry variety. About 40 per cent of our rosin production is used in making soap. The next most important uses of rosin are for paint and varnish and as a size or coating for writing and printing papers which must take ink. The rosin is added to the pulp in the paper making and becomes entangled in the fibers of the paper.

A few of the other ways in which rosin has fabricated the southern pineries into our lives is in the manufacture of grease, water-proofing compounds, plastic composi-



A PICTURE OF THE DOCKS AT SAVANNAH, GEORGIA, SHOWING AMERICAN ROSIN ON ITS WAY TO THE MARKETS OF THE WORLD. MORE ROSIN IS USED IN OUR FAMILY WASH-TUBS THAN IN ANY OTHER WAY. THE BULK OF THE WORLD'S SUPPLY OF TURPENTINE AND ROSIN COMES FROM OUR SOUTHERN PINERIES. THESE TWO COMMODITIES PERMEATE OUR DAILY LIVES IN A GREATER VARIETY OF WAYS THAN ANY OTHER FOREST PRODUCTS, EXCEPTING RAW WOOD

tions, including sealing wax, rubber substitutes, shoe makers' wax, roofing cement, cheap linoleum and oil cloth, papier-mâché and grafting wax for trees; pharmaceuticals, including ointments, plasters, cerates, and disinfectants; constituents of wood stains; for setting bristles in hair brushes; the making of fly paper and printing ink; adulterating linseed, castor, and olive oil; water-proofing textiles and cordage, and in the manufacture of lampblack for lithographic work.

Turpentine likewise filters into our body politic in many diverse ways. It is much used, of course, as a thinner for paints, varnishes, and wood fillers, as an ingredient of water-proof cements for leather, rubber, glass, and metals; in the manufacture of disinfectants, liniments, medicated soaps, internal remedies, ointments, synthetic camphor, celluloid, explosives, fireworks, drawing crayons, patent leathers; to prevent "bleeding" in the manufacture of cotton and woolen print goods and numerous other ways which do not bear the mark of the forest.

There are no authentic records of the number of people in the United States who partake of forest recreation at least once during the year, but it is conservative to say that well over fifty million Americans each year draw upon the forest in one way or another for pleasure and health. A few years ago the Forest Service employed a man distinguished in his profession to make a study of the recreational uses of the National Forests. Among other things, he computed the recreational value of the forests and he approached the problem by first determining, from prices prevailing at that time in our amusement markets,

the minimum market cost to the consumer of wholesome recreation in this country. His investigations indicated that for the National Forests area, recreational values were equivalent to five cents an acre a year or an aggregate of seven and a half million dollars annually.

In the East the forests are far more accessible to our dense population center and are consequently more widely used, a fact which serves to increase the recreational value of their acreage. Accepting, however, the figure of five cents an acre as a thoroughly conservative average for our total forest area of 463,000,000 acres, the pleasure producing value of our forests, even in their present depleted state, may be placed at not less than \$25,000,000 annually. In other words, if our forests should be wiped out over night in one clean stroke, we would be deprived during the next ten years of \$250,000,000 worth of recreation. That is putting it at the lowest possible figure, considering forest recreation merely as the cheapest form of pleasure and eliminating potential values. But it is obvious that the human value of two and a half billion hours spent in the forests hunting, fishing, tramping, picknicking, or resting, cannot be expressed in terms of silver dollars.

However we may reflect upon our need for forests, we cannot escape the fact that through childhood to the close of old age, the forest more and more serves us in these ways of marvelous diversity. It has nurtured us from starving and straggling bands of colonists into the richest and most advanced nation of the earth. It has become stamped upon our characters and welded into the marrow of our bones, whether we know it or not.



IN ANOTHER COMPARTMENT OF THE FOREST CUPBOARD ARE THE GREATEST HEALING COMPOUNDS WITH WHICH OUR HIGH-SPEED CIVILIZATION IS ENDOWED. THEY GO UNDER THE COLLECTIVE BRAND OF "FOREST RECREATION" AND THEIR CURES ARE OF THE BODY, THE MIND, AND THE SOUL

We are a forest-built nation socially and industrially. Do we dare, upon thoughtful consideration, to allow one corner of our foundation to slip from under us? Instead of becoming less dependent, we have become more and more dependent upon the forest as it has yielded new products upon which new industries have been built, new communities formed, and our standards of culture advanced. This is as true today as it was fifty years ago, because the full service of forests to man has not yet been reached.

Today the pinch of empty shelves in the forest cupboard is beginning to make itself felt and we are approaching the threshold of a great forest hunger. Already we have destroyed three-fifths of our original virgin forests, sixty per cent of what remains is west of the Rocky Mountains. States such as Pennsylvania, New York, and Michigan, which only a few years ago were supplying their own people with lumber and exporting great quantities, are today importing lumber from as far as Puget Sound—two and three thousand miles distant—at transportation costs aggregating millions of dollars annually. These and many similar facts are clearly discernible danger signals.

For years men held our forests to be inexhaustible. Their very abundance bred their waste, neglect, cheapness, and dissipation. It undermined the appreciation of forests which such wise and sturdy pioneers as William Penn sought to instill into his generation. We fell into the bad habit of taking for granted Nature's perpetuity of forests and of forgetting that trees are a plant crop, which, to be perpetuated, must be grown on a three-score and ten years' rotation as our wheat, corn, and cotton crops are perpetuated on one-year rotations. We "passed the buck" to Mother Nature and we have since then been dispossessing her with fire, poorly adapted forest laws, and unrestricted pillage of forest soils.

Is it any wonder then that Nature is able to restock our forest cupboard with just one tree to every four we consume? Nature, once robbed of her forest-growing vitality, is a hard taskmaster. Conceive, if you can, what would happen if Congress in the dark hours of the night should pass an unheard-of law so restrictive that the farmer could raise only one bushel of wheat to every four we are now consuming. We would rise up with a wrath new in the annals of democracy and make short work of that law, because we appreciate the intimate relationship between wheat and three square meals a day.

But the fact that our forests are slipping from us at a

rate of four to one fails to arouse us from a sleeping sickness of unappreciation. Rich with blessings derived from the greatest God-given forests known to man, we smugly read our little children the jingle of Old Mother Hubbard and her poor dog, while behind the swiftly moving stage of forest depletion their day of a barren



THE SIZZLE OF BROOK TROUT IN THE FRYING PAN, THE ODOR OF STRONG COFFEE FROM AN OLD BLACK POT, THE WARM, FRIENDLY WOOD-ASHES SMOKING LAZILY, AND ABOVE IT ALL THE PUNGENT SMELL OF BALSAM—WHO IS SO BOLD AS TO ATTEMPT TO VALUE THAT BIRTHRIGHT IN TERMS OF PIECES OF SILVER?

forest cupboard and a great forest hunger waits on our apathy. [Photographs by courtesy of the U. S. Forest Service except where otherwise specified.]

EDITOR'S NOTE.—This is the first of a series of twelve articles on important phases of our forest problem. The second article, "AMERICA'S TRANSITION FROM OLD FORESTS TO NEW," by E. T. Allen, forest economist of the Western Forestry and Conservation Association, will begin in the February issue of AMERICAN FORESTRY.

Forestry and Our Land Problem

By HENRY C. WALLACE, Secretary of Agriculture

[An Authorized Interview for American Forestry]

SEVERAL months ago a number of commercial organizations requested the Department of Agriculture to mobilize its scientific forces upon the problem of what to do with the cut-over timber lands in the Southern States. As the outgrowth of this request, a standing Committee on Land Use has been created. It contains a farm economist, a soils expert, a live-stock man, a farm-crop man, and a forester.

"The immediate work of this committee," said Secretary Wallace, "is to work out a program which represents the best experience and technical skill which the Department of Agriculture can bring to bear upon the use of the 90,000,000 acres of cut-over land in the South. But its work cannot stop there. The rational use of land, the same correlation of timber crops with live stock and food crops, based upon the factors of soil, climate, and market, is one of the foremost problems of the whole United States.

RATIONAL USE OF LAND

"American agriculture has received a terrific jolt during the past four years. Changes both at home and abroad brought about by the war and by economic developments since the war make it necessary for us to resurvey our agriculture. Those of us who are living pretty close to

the farmer and his problems during these trying times have become convinced that the expansion of cultivated land in the United States is due for a slowing up, that tillage will have to be contracted on a lot of the poor land along the margin of successful farming, and that for some time to come American agriculture will tend to concentrate capital and labor upon the best soils and in the regions most favorably located in relation to the principal food markets. We must find a profitable crop which can be grown cheaply, with little labor, on land which the plow will pass up. On much land of this kind Nature is ready with the crop—timber; and the needs of the day are ready with the market.

THE NEEDS OF THE DAY

"Long before the great war reset the stage on which the American farmer must play his rôle, the necessity for plan-wise growing of timber as a staple crop was very clear. An enormous acreage of logged-off land had piled up on which there was not the remotest prospect of cultivation. It is still piling up at the rate of four or five million acres a year. The abandonment of plow land in a good many States was throwing other millions of acres out of employment and partially depopulating the regions



FOR LAND WHICH THE PLOW HAS WORN OUT, WE MUST FIND A NEW CROP, AND ON MUCH OF SUCH LAND NATURE IS READY WITH THE CROP—TIMBER. THE PHOTOGRAPH SHOWS A NEW FOREST IN THE MAKING. FROM AN OLD WHITE PINE, NATURE HAS SOWN THE SEED AND TOUCHED THE SOIL WITH LIFE



AS THIS PICTURE, TAKEN IN THE CUT-OVER PINE COUNTRY OF GEORGIA, SO CLEARLY SHOWS, NATURE IF GIVEN HALF A CHANCE WILL "PUT OUR UNPLOWED ACRES TO WORK GROWING A PROFITABLE CROP FOR WHICH THERE IS NO GLUTTED MARKET; REPOPULATE OUR DESERTED FOREST REGIONS AND ABANDONED FARM DISTRICTS, GIVE THE EARTH AND THE PEOPLE SOMETHING TO DO." THIS HEALTHY YOUNG FOREST IS THE RESULT OF THREE TO FIVE YEARS OF FIRE PROTECTION

which contained it. The pasture pine in New England and the old-field pine of the South bear testimony to the reversion of large areas of plow land to the chance forest sowings of Nature. In the decade between the last two census years, the area under cultivation decreased in 19 States. New England lost 32,000 farms with a shrinkage in improved farm land of 1,140,000 acres. New York, New Jersey, and Pennsylvania lost 43,230 farms. The old order of land use was changing and is still changing in many of the densely populated States of the East. A new order of land use must take its place. The realignment of agriculture forced upon us by the great war will give it tremendous impetus. I can conceive of nothing more important than an intelligent co-ordination of rural effort that will afford profitable crops for lands which cannot economically be tilled.

THE NEW ORDER OF LAND USE

"And just as the land economist was wrinking his brow over this problem came the national need for timber knocking at the door, indeed bursting right through it. While the old order in American farming, under which men reached out constantly for more raw land, has changed into a new order which impels contraction, our national timber supply has been silently and steadily disappearing. One forest region after another has been swept over. The average carload of lumber has had to be hauled farther and farther from the sawmill which made it to

the farmer or city man who put it into his home. Last year, I believe, the country hauled something over two million carloads of lumber an average of 485 miles and paid \$275,000,000 in lumber freight bills.

TIMBER—THE NATIONAL NEED

"And meantime our dependence, as a people, upon our forests has increased enormously. We use five times as much forest-grown paper per capita now as we did 30 or 40 years ago. We manufacture half of all the lumber produced in the world and use 95 per cent of what we manufacture right here at home. American factories make more things out of wood than the factories of all the rest of the world combined and use more wood between them than the factories of all the rest of the world put together. Every year our keen business men and scientists discover how to make new things from wood to supply human needs. Our national life and commercial supremacy have been built up upon the liberal use of forests—and our forests are rapidly disappearing.

TWO BIRDS OF ILL OMEN

"The answer is so plain that he who runs may read it. Here are two big birds of ill omen to be killed by one stone. We can put our unplowed acres to work growing a profitable crop for which there is no glutted market; repopulate our deserted forest regions and abandoned farm districts; give both the earth and the people something

to do; and meet the impending shortage of forest products—by growing wood, east, west, north, and south as part of a rational scheme of land use, with somewhat the same intelligence and skill that we put into the growing of cereals and fruit. National reforestation should command the interest and support of every thinking American citizen.

"It would doubtless be best for the country if some law could be passed under which forthwith every one would proceed to grow trees. But we know that great economic changes of this kind affecting the habits of people in the use of their land necessarily move slowly. It cannot be accomplished in a year or by any single piece of legislation.

"As such things go in the attitude of nations toward their natural resources, we have already moved pretty rapidly. It was only about 30 years ago that the first



THE LAST OF A ONCE GREAT TRACT OF WHITE PINE IN WISCONSIN. WHEN THIS FOREST IS CUT, WHAT OF THE LAND? "JUST AS THE LAND ECONOMIST WAS WRINKLING HIS BROW OVER THIS PROBLEM, CAME THE NATIONAL NEED FOR TIMBER KNOCKING AT THE DOOR, INDEED BURSTING RIGHT THROUGH IT"

National Forests were created. It was only 25 years ago that the first ideas on the protection and management of public forests were written on our statute books. It was only 11 years ago that we started to buy forest lands for the protection of navigable streams. Within the last dozen years fifteen States have enacted laws dealing with the protection and regrowth of their forests and the area of private forest land receiving some sort of protection has increased from 61 million to 166 million acres. The country is taking its forest problem seriously and ground has been gained pretty rapidly. Nevertheless, beyond any question, the time has come for another step forward. We still have a long way to go in evening things up with our forests. As long as we are cutting them down at the rate of 50 cubic feet per acre every year, while something less than 15 cubic feet is being grown, as long as our private forest land, one-fourth of the soil

of the country, is largely threatened with idleness, we are headed for disaster.

"The final answer to all these questions doubtless will require rather far-reaching legislation under which the care given to forest lands and the regrowing of timber upon them will be under a measure of public control. I doubt, however, if this answer can be written until the people have been more thoroughly educated on these questions and have thought them out to a more mature and more generally accepted conclusion. Meanwhile, we should lose no time in going right ahead with the obvious things that should be done. We can write another chapter in the national forestry policy of the United States right now along the lines of what has been well tested and found good. This will not be the last chapter, but it will represent real progress.

"The first thing which it seems to me the Federal government should do is to consider its own opportunities. It is illogical, not to say absurd, for the nation to be buying forest lands in order that they may grow timber, and for the nation to be preaching reforestation to private land owners, while at the same time failing to protect and conserve the forest growth on large areas of land which it owns itself. The logical expansion of the National Forests to embrace all of the lands in Federal ownership most useful for timber growing or water conservation was blocked several years ago by opposing interests and statutory limitations. There are at least eight million acres of such lands in the continental United States, besides an enormous area in the interior of Alaska. There are large areas of timber land in Indian Reservations which are now well managed but will ultimately be liquidated as tribal properties and opened up for general disposition. There are considerable areas of forest-growing land in military and naval reservations, which should produce continuous and well-grown crops of timber, while at the same time serving the purposes of national defense for which they were established. A policy means an established principle which governs action. It ought to be an established principle in the United States that all lands which the nation itself owns or controls and which will render their greatest service in growing timber or conserving stream flow should, after this fact has been authoritatively ascertained, be incorporated in the National Forest system.

IDLE LANDS THREATEN DISASTER

"A second line of development which has already been well tested is the extension of the National Forests by purchase on the watersheds of navigable streams. It has been a great revelation to me, in my 18 months as a member of the National Forest Reservation Commission, to see what a valuable public property has been built up during the eleven years since the passage of the Weeks Law and to learn in how many ways these purchased lands are helping to work out the forest problem of the country. And it has also shocked me to find out that the denudation of forest lands is going on seven times as fast as public



IN THIS CASE THE LAND WAS LEFT TO FIRE AND UTTER DISREGARD—ABANDONED TO THE ENEMIES OF NATURE. AND THE RESULT? WELL, SEE FOR YOURSELF. WHAT DO YOU OFFER FOR IT?

forest ownership is being extended. While the national government and the States and municipalities, all combined, have been acquiring about 10 million acres of public forests or forest parks, 69 million acres of timber land have been cut over and to a large extent denuded and fire swept.

"Obviously the national government cannot acquire all of the forest land in the country nor any considerable part of it. Obviously forestry practice must reach and grip the private timber owner. Nevertheless, the creation of more National Forests on key areas is a mighty sound and helpful thing. By key areas I mean limited tracts where Federal ownership will be of special value in protecting stream sources, growing timber, and giving the local people a practical demonstration of fire protection and good forest management. I would like to see National Forests in all of the forest regions of the East such as we have now in all of the forest regions of the West. Each of them would become an educational center of the highest value. Around each of them would grow up co-operative arrangements with land owners for forest protection, practical examples of growing and harvesting timber, the inculcation of the forestry idea. Practically every nation of Europe has built up its forest policy around a core of publicly owned forests; and the United States should profit by their experience. We ought to lay out a program of forest acquisition, adjusted to the resources of the Treasury, under which this work can go forward steadily without the yearly peril of interruption. And we ought to encourage States and municipalities to do the same thing.

"A third plank in an immediate forestry platform, and it might well be put first, should build the co-operative protection of our forest lands right up until it embraces every one of the 39 States and every one of the 450 odd million acres. Among the foolish and thoughtless wastes to which the American people are prone, I doubt if there is any more senseless than burning up year after year millions of acres of young forest growth, to say nothing of the merchantable timber and homes and lives frequently destroyed. To permit this to continue, with the scarcity of timber now so plainly written on the wall and with the known inability of most of this land to grow any other crop except timber, would be inconceivable national apathy. We have already made a good start. Twenty-six States are now co-operating with the Federal government in plan-wise forest protection, which covers in a way about half of the privately

owned woodlands of the country. We ought to build on



WHILE IN THIS CASE THE LAND WAS PROTECTED AGAINST THE ELEMENTS OF MAN-MADE DESTRUCTION AND TODAY BEARS A 35-YEAR-OLD CROP OF NORWAY PINE, WHICH IS NOT FOR SALE

this foundation with a Federal law which states the policy more clearly than has yet been done and gives the Department of Agriculture a mandate to ask every State which contains forest lands to join forces with it. Once forest fires are brought down to a point where timber-land insurance becomes feasible, we will have gone far in actually restocking our cut-over lands and in encouraging reforestation as a commercial undertaking.

"There are, of course, other things that ought to be done without more waste of time. The national government ought to expand its facilities for research in timber growing and timber use. The time is ripe for interesting American business in growing wood. The necessity is here for interesting American business in the most economical and efficient use of wood. These practical needs of the situation ought to be met to a fuller degree than the public agencies are now able to do. The nation would do well to make a special point of encouraging the planting of forest trees. We are now

planting about thirty-five million every year, States, land owners, and National Forests all combined. But this represents less than 40,000 acres, and with our enormous accumulation of burned and idle land, that is indeed a small drop in a big bucket. I would like to see the

Federal government offer financial co-operation to any State in growing and distributing forest-planting material at cost.

"There is an urgent call that we make ourselves a forest-growing nation. Our day of timber mining is over. Our idle lands are calling for something to grow. Our markets are calling for a larger supply of forest products. We

cannot do everything at once. Here are some specific things that we can do, that have been well tested by experience, that will represent more ground gained. Perhaps they are still too incomplete to be dignified by such a term as a National Forestry policy. At all events they constitute to my thinking a workable and attainable program.

"Some people seem to have the notion that the National Forests should be administered simply on the theory of disposing of the timber after the manner in which private forests have been administered. The Department looks upon the matter very differently. Ripe timber

should be harvested as it is needed, but in such a way

that other trees will grow to be harvested in the future. For years our forests were treated as if they belonged to the present generation. Now we see that conservation of our forests is one of the greatest of our national problems.



"OLD FIELD PINE OF THE SOUTH," SAYS SECRETARY WALLACE, "BEARS TESTIMONY TO THE REVERSION OF LARGE AREAS OF PLOW LAND TO THE CHANCE SOWINGS OF NATURE." AND HERE YOU SEE ONE OF THESE CHANCE SOWN YOUNG FORESTS, WHICH AT THE AGE OF FORTY YEARS IS A CROP WORTHY OF OUR CONSCIOUS EMULATION ON A LARGE SCALE

Outlook for Forestry in Pennsylvania

By GIFFORD PINCHOT

PENNSYLVANIA has been, but is no longer, grossly negligent in the treatment of her forests, which have contributed so largely to the prosperity of the State. Until 1890 she was able to supply her own timber needs and export a balance. Today she must import 84 per cent of the lumber she uses, 74 per cent of the products needed for pulpwood, and 75 per cent of the timber required for mining in the anthracite region. Pennsylvania's dependency upon outside sources of wood costs her at least \$100,000,000 a year.

"The forest lands of Pennsylvania have not only been cut; they have been burned again and again. Their productive capacity has thereby been reduced to one-tenth of what it should be. They should be growing a cord of wood per acre annually—they are actually producing only one-tenth of a cord. The job ahead—and it is a big one—is to restore them to reasonable production.

"A start in the upbuilding of the State's forest lands has been made. The State Forest Department is now organized to attack the forest fire evil aggressively. It has a State-wide organization, which, in co-operation with local organizations and individuals, is actively preventing, detecting, and suppressing fires. A liberal appropriation for forest protection granted by the last Legislature has made it possible to supply observation towers and telephones and to equip the men with fire-fighting tools. The beneficial effects are being reflected in the smaller size of the average fire.

"The Department is energetically preaching and teaching better forest practice throughout the State. Advice and assistance in timberland management and in planting are being given to numerous forest owners. The public is being kept informed through the press and through publications, talks, exhibits, and other educational means of the forest situation and of what should be done to improve it. Better co-operation than ever before is being secured from timberland owners, railroads, fire-protective associations, boy scouts, and many other agencies.

"To restore the forests of Pennsylvania will require long, hard, consistent work. The fight against fires must be incessant. Nothing but protection and care can bring these lands back to full productive capacity. In order to assure the needed timber supply of the future the State must continue to take the lead in forest protection, acquisition, and management. For that purpose it must maintain an efficient Forest Department and must push the work steadily.

"Forest protection is the key to progress in forestry in Pennsylvania and the heart of it lies in the rapid acquisition by the State, under a bond issue, of the hundreds of thousands of acres of idle land, which, if not made productive by the State, will remain idle indefinitely.

"The outlook for forestry in Pennsylvania is bright. The public is better informed on the forest situation and is co-operating with the Department of Forestry more effectively than ever before. With its continued support, there is at least a reasonable chance that Penn's Woods will be restored in time to save the State from the worst of the punishment from the timber famine which threatens it now."

The foregoing statement by Gifford Pinchot, whose very name spells "forestry" to the people of America, is of special interest in the light of his recent election as its Governor of Pennsylvania. The Keystone State, which has already made wonderful progress in the conservation and perpetuation of her forests, has now come into her own. When the result of the Pennsylvania election was known the American Forestry Association sent this message to Mr. Pinchot: "The American Forestry Association extends to you heartiest congratulations on your splendid victory and greets you with keenest delight as the newly-elected Governor of Pennsylvania. Your overwhelming majority is a clear victory for the high standards of leadership and accomplishment which have marked your distinguished career as a forester and a public servant. Indirectly it is a victory for American forestry, to which you have given so much of your life."



PENNSYLVANIA'S
FORESTER-GOVERNOR

Forest Curiosities

By ARTHUR H. CARHART

IN a realm all his own, which has never been extensively invaded by tourist hordes, in silent majesty, stands the "King of Ireland." On his face can be seen all the smug complacency which becomes a king. No court jester could win a smile from the kingly countenance. His face has been unmoved by passing pomp and poverty for many years and with the elements kindly disposed it may remain so for many years to come. For the "King of Ireland" of the Shoshone is solid stone! Long live the King!

The interesting bit of rock, standing in one of the side canyons of the Shoshone, which has been graven by wind and rain into an astonishing likeness of an Irishman with pipe in his mouth and crowned by a rock diadem of mammoth proportions, has been christened the "King of Ireland." At no place has Nature shown such art and humor combined as in this piece of sculpturing. The turned-up nose and the rounded cheek keep company with a brow as well proportioned. The crown can be discerned easily. But most unusual of all is the presence of a piece of rock that extends out from the lips of the "King," forming the stub of a pipe. The likeness to a son of the Emerald Isle is complete, while the presence of the stone crown surely signifies that he is a king.

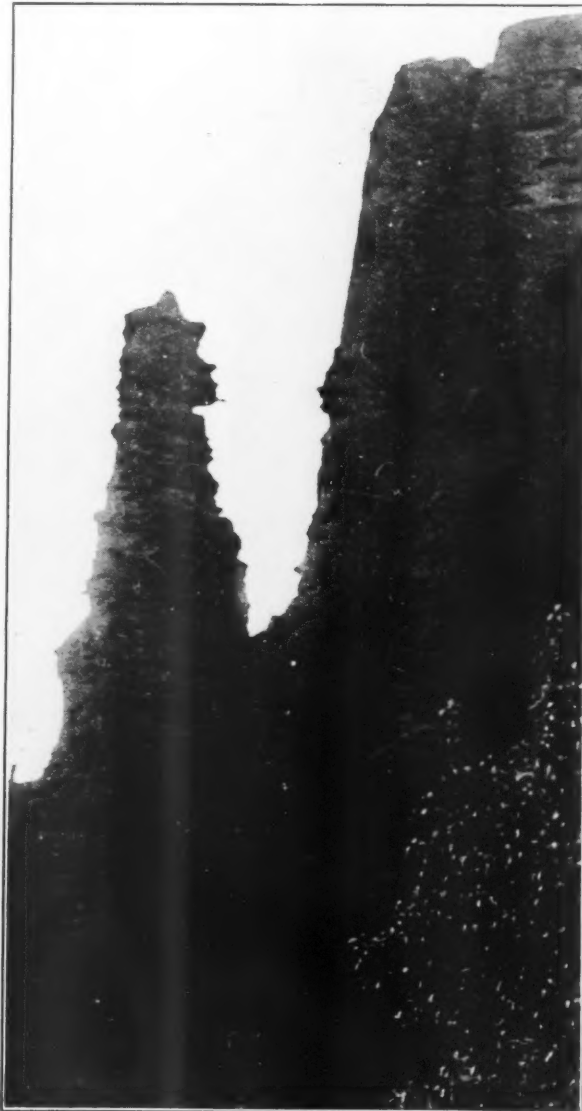
Many who read this have seen the unusual rock formations along the Cody Road through the Shoshone National Forest and leading to the Yellowstone. Many more who here learn of the "King" for the first time will travel the road. But it is probable that no more than one person in five hundred will come to the court of the "King." It is not difficult of access. There is no

formality. One need not even have clothes for a state occasion. And there is no long walk to where the "King" may be viewed. The point is that few know that he is there just a few feet from the main road. So many

miss this wind-carved statue of immense proportions which is among the wonders viewed in quantity along the Cody Road of the Shoshone. On your next trip over this road ask the local forest man where you may find the "King of Ireland" statue. Directions given here would be entirely inadequate, and only when you are near the "King's" court and talking with a neighbor of his can you get the best information as to how to reach his presence. But if unusual manifestations of Nature's forces interest you, by all means take the time and trouble to get acquainted with Shoshone's "King of Ireland" rock.

The area in which the King presides is rich in the carvings of wind and rain. Here are the "Goose Rock," a queerly proportioned goose-like structure; the "Mr. Punch" rock, where the outline of the classic features of Punch may be seen, and still another rock presents the outline of an old woman going into a cabin with a bundle of clothes on her head. This cabin even has a window in it to make the likeness complete. Still another section along this road of the Shoshone has an area called "the Garden of the Goops,"

where many fantastic shapes are found; and near the King of Ireland himself there is a rock called the "Madonna" rock, for it resembles a mother holding a child in her arms. But none are more interesting than the "King" and few rock formations anywhere equal this eccentric carving done by Nature while in a freakish mood.



THE FAMOUS STONE "KING OF IRELAND" ON THE SHOSHONE

Carved in the solid rock by Nature in a humorous mood, the grotesque King gazes calmly and majestically out over the valley he commands.

Reforestation of Bible Lands

By JANE HILL

A CONSTRUCTIVE program for the reforestation of Bible lands is being inaugurated by the Near East Relief, the organization chartered by Congress to relieve the distress of the people of the famine-stricken and war-torn areas of the Levant.

Palestine today is for the most part a treeless country, all its forests having been improvidently destroyed to provide building material and fuel. Yet it is a country which

agricultural prosperity of 2,000 years ago will be made possible when the war orphans under American care become skilled in the scientific methods of farming and reforestation which is a part of the educational curriculum in Near East Relief orphanages.

The name "Jericho" means "Place of the palm's fragrance." The palm grew naturally, without cultivation, all along the valley of the Jordan. In southern Syria, along the busy maritime coast from Beirut to Acre, great palm groves greeted the eye of the Roman traveler. Tyre and Sidon were surrounded by palms. Phoenicia took its name from them—the "Land of Palms."

The passing of the palm trees from most parts of Palestine has certainly served to add to the prestige of the few specimens that remain. There are a half-dozen beautiful trees in Jerusalem and a fine group surrounding the mosque at Nablus. The most striking spot on the whole coast of the Sea of Galilee is the little palm-tree oasis which greets the traveler at sunrise from the window of his hotel at Tiberias. In the valleys beyond Nazareth an occasional stately palm is encountered, and in Damascus there are several fine specimens. It is along the seashore between Acre and Beirut, in Syria, that they are most abundant, and here they are fighting a useful battle against the encroachment of the sands,

which a few years ago threatened to engulf all the fertility of these maritime plains.

Agricultural conditions, of course, are entirely different here from those in European and American countries. Palestine cannot hope to produce great forests like those of the United States; but it is faced with a rigorous necessity of producing its own fuel and building material, and some of the foreign agricultural colonies in



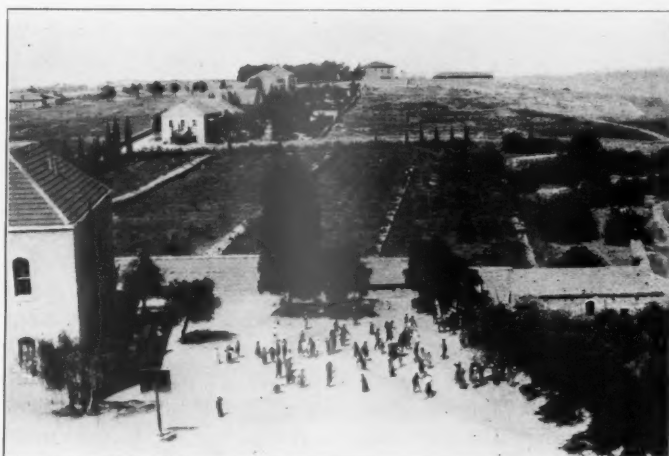
SOME OF THE NEAR EAST RELIEF ORPHANS AND THE CYPRESS TREES THEY HAVE SET OUT ON THE ORPHANAGE GROUNDS AT SIDON

needs large forest reserves and which cannot prosper without them.

Gone are the cedars of Lebanon, save for one small hollow on the northwest slopes of the mountains. Gone are the oaks of Abraham, save in the table-lands of Gilead, where Absalom was caught in the low-hanging branches of one of the large trees of Bashan. Most of the sycamores and the oleanders have also been sacrificed. Even the palm trees, once the glory of the land, are almost extinct.

The loss of the picturesque palm is perhaps regretted the most of all, because it is by far the most beautiful and most characteristic of all the trees of the Holy Land. In the old Roman days the palm was universal throughout the country. Nowhere else in the Roman Empire did the tree grow so beautifully and uniformly in its stateliness. The palm tree was imprinted on the old Roman coins as the national emblem.

Jericho was once surrounded by a palm grove seven miles in width, and in those days must have been a city well worth visiting. Today every vestige of the old forest has disappeared, and the plain around the city, once well watered and fertile, is now the desert site of a group of squalid hovels with a degenerate population of not more than 250 souls. To renew the



A NEAR EAST RELIEF FARM IN BEIRUT WHERE WAR ORPHANS ARE TAUGHT HOW TO PRESERVE THE TREES. A GROUP OF OLIVE TREES IS SHOWN IN THE LOWER RIGHT-HAND CORNER OF THE PICTURE



SIX LITTLE ORPHANS SEATED ON A BENCH BETWEEN THE PEPPER TREES AT SIDON

Palestine have already proved that this can be done without difficulty.

Most of the war orphans under American care in Bible lands expect to remain there as farmers and artisans. Therefore the importance of the re-

forestation of the country is emphasized in the industrial training classes. Economically speaking, the Holy Land is dependent on sound agriculture, irrigation, and forestation.

Realizing that the future of the Near East rests largely on the 100,000 kinless children generous, farseeing Americans are providing for until they are old enough to look out for themselves, the Near East Relief is making every

effort to give them the kind of training that will be most helpful in rehabilitating the country. To this end the school day is divided to allow the children to spend part of the time acquiring a rudimentary schooling and the other part in practical industrial accomplishment.

It is interesting to reflect that the youngest of the great Christian nations is teaching children, in the lands where Christianity had its birth nearly 2,000 years ago, how to preserve the ancient date palm that boys and girls scattered in the pathway of Christ on his triumphal entry into Jerusalem five days before he was crucified.



AN ORPHANAGE AT SIDON, WHERE THE CHILDREN UNDER AMERICAN CARE HAVE SET OUT LOCUST TREES

Forest Legislation in Quebec

"At the present session of the Legislature of the Province of Quebec," writes Ellwood Wilson, "it is likely that the Minister of Lands and Forests will bring forward legislation which will be a great step in advance, and will much improve the forest-fire prevention situation if it should be passed. This legislation will probably take the form of requiring organized municipalities or parishes to appoint a fire ranger, who will be responsible for fighting forest fires and will be authorized to call on any able-bodied citizens for help. The cost of this fire fighting will be borne by the municipality, which will also be responsible for damages, which damages can be charged back to the individual land owner on whose lands the fires start.

"This will serve to impress on all the population the seriousness of forest fires, and by touching the pockets of the farmers and settlers will make them realize the necessity for taking every possible precaution to prevent fire.

"A further step which would be of value would be that of fixing a standard low rate of wages for men who were called out to fight forest fires, so that there would be no temptation to set fires in order to get work.

"The Government of Quebec realizes the necessity for fire prevention and better methods of cutting, in order to put its lands on a sustained yield basis. Much progress has been made in the last few years, and if the program of the present Minister is carried out, Quebec will soon be in the very forefront of forestry progress.

"The scheme which is being talked of is to combine under the Minister of Lands the control of Fish and Game and Mines. This would enable the surveillance

and control of all parties who might have any business in the woods, and would permit of the full value of the law requiring permits to travel over Crown lands, and would co-ordinate all the interests in the forest. The idea would be to divide Crown lands up into districts, each one under the control of a resident forestry engineer, who would be responsible for the care of his territory, supervision of logging operations, fish, game, and inspection. Living in the woods he would become well acquainted with his territory and with its needs.

"The system of joint inspection by company and Government foresters previous to cutting, and later the inspection of logging operations, has worked out well this fall, and has resulted in much closer utilization by taking lower stumps, smaller tops, getting out all wood which it would be possible to utilize, and in preventing cutting of trees which are not yet mature, and also the too great opening up of stands. It has also further aided the companies by preventing cutting contrary to Government regulations, thereby greatly reducing the fines which will be imposed, and which in past years have amounted to very large sums.

"At the last session of the legislature a law was passed that any one who wished to operate in any other way than according to the diameter regulations already established, would have to submit a working plan, giving an inventory of the wood on the tract which it was proposed to cut, the rate of growth, and general methods of felling. There was much opposition to giving this information to the Government at first, but nearly all the limit holders have now seen the advisability of carrying on operations in this way, and are co-operating with the Government."

The Romantic Parasite

BY LELA COLE KITSON

DURING the holiday season carload after carload of mistletoe is used in festive decoration, but just where it comes from and how it grows—what its fragile beauty costs our native tree life—rarely enters into our thoughtless consideration. That it must have forest trees on which to thrive, and that this thriving means,



A TREE SO HEAVILY LADEN WITH MISTLETOE THAT IT APPEARS TO HAVE AS DENSE FOLIAGE IN WINTER AS IN SUMMER

eventually, the death of the tree, are facts surprisingly little known.

The Mexican name for the mistletoe is "Muérdago," which means "the killer." When the Conquistadores pushed their way up the broad Rio Grande valley on their journey to the Pueblos of northern New Mexico, they found the groves of cottonwood trees which lined the muddy stream's banks attacked by a vivid green shrub which seemed to literally bite the trees and suck their life-blood, hence the picturesquely descriptive name for the handsome plant which we of the North have revered since prehistoric times as "the romantic parasite."

Held sacred by the Druids and credited with magical and medicinal properties by the ancient peoples of Europe, the mistletoe has claimed recognition in every age, and still exerts a singular influence in the affairs of mankind. Doubtless many a romance of A. D. 1923 if

traced back to its source would lead to a sprig of innocent-looking withered leaves suspended over a doorway, and each year finds our literature further enriched with poetic reference to this little green monster whose true nature we prefer not to think about.

Of late years the Southwest has contributed large quantities of mistletoe for holiday decoration, and most of this has come from the great Mesilla Valley of the Rio Grande where the cottonwood flourishes in great numbers. The Southwestern members of the *Loranthaceæ* family may be roughly divided into two groups: the mountain mistletoe and the valley mistletoe. It is the latter that is of commercial importance, because of its larger size and handsomer and more abundant berries.

The leaves of the mountain mistletoe are small, sometimes mere scales, and have little or no greenish tinge, being rather of a brown or yellowish hue. The berries are usually small and inferior, although some species produce handsome berries. The variety found solely on the oak is dark green in color and has fine berries, but it is comparatively rare and seldom used for decorative purposes. The yellow pine, juniper, and cedar, in fact, nearly all trees common to the mountains of southern Colorado, Arizona, and New Mexico, are victims of various species of the mountain mistletoe.

The valley variety is also known as the "soft-wood mis-



A BUNCH SHOWING THE EXCEPTIONALLY LARGE AND ABUNDANT BERRIES OF THE MESILLA VALLEY MISTLETOE

tletoe," because it attacks such trees as the ash, willow, poplar, sycamore, and to some extent even cultivated fruit-trees. It is the valley cottonwood, however, that suffers most from the ravages of the romantic parasite, and no tree is more beautiful or more valuable as a shade tree than this, its particular and long-suffering victim.

One of the largest of Southwestern trees, the cottonwood may truly be said to be man's best friend in the arid regions. Every ranch has its whispering groves offering welcome shade in the hot days of summer, and cottonwood saplings are usually the first signs of life to put in an appearance on reclaimed desert land. Along the river banks and the margins of dry stream beds the tree grows naturally, and valley roads and "acequias" or irrigating-ditches become, in a few years, tunnels of welcome green where the tree is planted. The full round tops and drooping branches are a delight to the eye until far into the winter with their golden-tinted autumn leaves, and this glorious foliage scarcely disappears before the delicate green of spring has taken its place. In some localities the new leaves appear as early as February, and by April the cottonwoods are resplendent in their summer dress.



MISTLETOE WHICH HAS KILLED ITS HOST AND SO COMMITTED SUICIDE

It is this fine tree that the mistletoe is doing its best to kill. Once let it get a start in a grove and it spreads like a plague. Birds and the wind serve as carriers from one tree to another, and soon a gaunt skeleton rears its head where before was a luxuriantly-leaved tree. So

densely are some of the cottonwoods loaded with the mistletoe that they appear to have as thick foliage in winter as in summer; a grove soon succumbs, of course, to such exhaustive attacks. Fortunately a tree thus doomed is a comparatively rare sight, most of them harboring



A HALF-DEAD TREE HEAVILY FESTOONED WITH MISTLETOE—"THE ROMANTIC PARASITE"

fewer of the parasites and thus able to withstand the pest for a longer time. Very old, large trees seem better able to defend themselves than the young or half-grown ones, and an old tree survives indefinitely with a load of the parasite that would kill a young one rapidly.

Occasionally the eye is greeted by the sight of a gaunt dead trunk upon whose blasted branches hang a remnant of dried and withered brown bunches—mistletoe which has committed suicide. Gone is the vivid, poisonous green which fed on the life-blood of the tree; gone the waxen-white, semi-transparent berries, so cherished at Yule-tide; dead at last by its own ruthless piracy is the "Killer," and only a cluster of crumbling leaves silhouetted against the crimson of the winter sunset, remains to tell the story.

"When it is realized that we are consuming our timber four times as rapidly as we are growing it, we must encourage the greatest possible co-operation between the Federal Government, the various States and the owners of forest lands, to the end that protection from fire shall be made more effective and replanting encouraged."

Warren G. Harding

The Regeneration of the Highlands

By A. MACCALLUM SCOTT, M. P.

[In the *Edinburgh Scotsman*]

WE were a party of members of Parliament of widely different shades of political opinion, and we had set forth on a tour with a view to discover something of the possibilities of afforestation in the Highlands of Scotland. At Beaulieu, under the guidance of Lord Lovat himself, we saw what a far-sighted landowner, with a family tradition behind him, can do to make forestry on an extensive scale a source of profit to himself, and of prosperity and well-being to a large local population. At Fort Augustus, under the guidance of Mr. Sutherland, of the Forestry Commission for Scotland, we saw the beginnings of a planting scheme, which, when it is completed, will cover some 9,000 acres of poor grazing and waste land with a valuable crop of timber. And at Culbin Sands we saw the onward march of the devastating sand dunes being stayed by the agency of the forester.

I have no space in which to narrate our many interesting experiences during each of these visits, or to tell of the joys of motoring through some of the most beautiful scenery in Scotland. Nor can I speak as to the impressions formed by other members of the party. I can but give expression to some broad and general, but very definite ideas which were formed in my own mind.

DEEP-ROOTED PREJUDICE

Right at the beginning of our tour we ran full tilt against one of the most deeply rooted prejudices, which throughout the past generation have raised an almost insuperable bar against any attempt at public action to promote afforestation in the Highlands. "It is a great pity," said a veteran land reformer, who had led the crofters in many a fight, "that you are taking good arable land to plant with trees. The people want the land, and why should they be put off it just for trees that neither you nor I may live to see cut. To clear men off for sheep was bad enough, but for trees—that is worse."

"I agree with you," said the forester of our party, "that it would be a crime to plant good arable land with timber. We don't do that. If you can tell me of any case where we are accused of doing so I will go down with you at once and upset it."

"There is such and such a place," said the reformer, "not ten miles away, where they have planted some acres of good arable land just to prevent a crofter from getting his holding extended."

"But we have nothing to do with that place. We have planted no trees there."

"Perhaps it is the Laird himself who has done it."

"Perhaps it is. I know nothing about it, and in any case, if things are as you say, we would not approve of such action."

The land reformer returned to the charge—"There is

Ratagan, over at Glenelg in the West, where the Forestry Commission has bought up a large sheep farm. There is a lot of good arable land there, but I hear that it is all being planted. Even the shepherds are being driven out of their jobs. The people are very much upset about it."

"I am glad you mentioned Ratagan," said the forester, "for the very opposite is the case. It is quite true there is some good arable land there. It has all been set aside for small holders, and arrangements are being made to settle them there. On the side of the river which we are keeping there is some good land. It has been divided between the shepherds who were formerly employed on the farm. We will be able to give employment both to them and to the other small holders, which will make them much more prosperous than they could ever be on their holdings alone. Not a single acre will be planted which is worth more than 2s. or 3s. a year. Is not that a good thing to do?"

"Well, yes," said the reformer sceptically, "if it is as you say. But I have heard different!"

A FIXED IDEA

The highland land reformer of the past two generations has his eyes fixed on small holdings to the exclusion of everything else. He has room for no other idea than the direct creation of small holdings. He has a fixed idea that afforestation is merely a device of the enemy for shelving small holdings. It is heresy to suggest that afforestation may be the surest and quickest way to establish on the land a race of prosperous and contented small holders.

We motored up Glenmoor to Fort Augustus, and beyond as far as the head of Lochloch. In a few hours we passed from clan territory to clan territory, which in the old days had been almost as distinct as separate States. We passed through the territory of the Frasers, the Chisholms, the Grants, and the MacDonells, almost to the confines of Cameron of Lochiel. We passed monuments of savage conflicts in the old clan feuds, and of the gallant men who had gone forth from these same glens to leave their bones on the monstrous battlefields of Europe and Asia in our own day. Alas! the whole district has been sadly depopulated. Crofts and crofters have disappeared. A few scrubby trees, self-sown birch, hazel, and pine, rise from the waterside. The bare hillsides pasture thinly scattered sheep or deer.

"Look around you," said the forester, "on the derelict land of Scotland. There are not 500 acres of planted timber in the whole long stretch of the glen. There are at least 50,000 acres suitable for afforestation, and capable of yielding a larger profit from timber than they yield as poor grazing. They could produce £200 worth of timber per acre, or a total of £10,000,000 spread over from 35 to

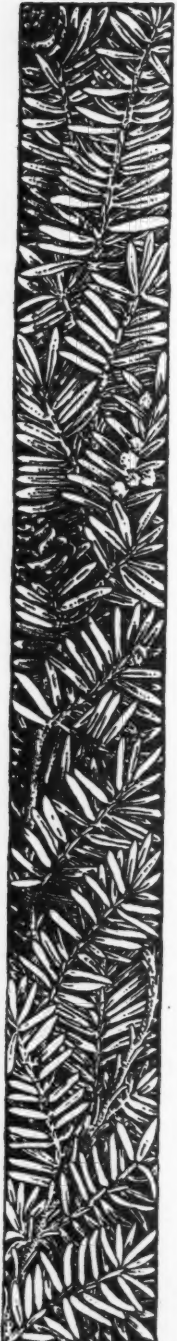
[Continued on Page 56]



Tree Stories For Children

Paper Made From Trees

BY MARY ISABEL CURTIS





A LITTLE boy I know went with me up on the mountain side, one day last fall, to watch the lumbermen at work skidding logs into great piles as large as a small house. The little boy looked up at me.

"Oh, wouldn't it be fun," he said, "to set a match to it and have a great big bonfire?"

"Not at all," said I, "for that would mean so many hundred sheets of paper burned before they were even made."

He didn't understand and so I told him how all these logs were to be used in making paper.

Perhaps you've seen the round, gray, papery hornet's nests hanging from a tree branch, or up under the eaves of a house? Well, these nests are really paper. Hornets made the first paper from wood, and men learned from them how to use our trees for making paper. The hornets take mouthfuls of wood from unpainted fenceposts or dead limbs of trees. They chew them into little balls of pulp and spread each mouthful carefully on the edge of the nest they are building. We make paper in the same way by machinery. Thousands of spruce and other woods are cut down every year, piled into great heaps, and later dragged, or floated down a river, to a pulp mill. There they are chipped by machinery into little bits, put into a tremendous kettle, or cauldron, called a digester, and over them is poured a liquid made from a lime and sulphur solution. The wood chips cook in this kettle for hours until they are pulp, like the pulp the hornets have chewed for their nests. Then the pulp is poured into another vat where it is churned around in water to wash out the solution. From this vat it is drawn off and passed between great hot rollers that iron the pulp into large flat sheets. The sheets pass from one set of rollers to another, each set ironing them out a little thinner, until at last they come out real paper, ready to be printed on and delivered at your door as the morning newspaper.



The Girl Behind the Fire Line

By WILL C. BARNES

IT was the height of the fire season. The Inspector from Forest Service headquarters at Washington, after a hard night's ride over rough and circuitous roads, stepped out of a decrepit auto stage into a little mountain town in northern Arizona, a hundred miles back from the railroad and walled in by pine-covered mountains.

The Inspector ate a hearty meal of ham and eggs and black coffee at the Palace Hotel, a bleak frame building much in need of paint, and hastened around to the local office of the Forest Supervisor, from which the government's administration of the surrounding forests was directed. He found the Forest Supervisor, his eyes red and bloodshot from sixteen consecutive hours' duty on a fire line the day before, busily running through a sheaf of fire reports from his rangers. It was not yet eight o'clock, but the office employees were all at their places and hard at work.

"On their toes," said the Inspector, mentally.

He greeted the Supervisor cordially and the two discussed the fire situation for a few minutes. The Inspector was handed a package of mail marked "Urgent," and he stepped into the outer office to read his official documents.

"Hell-O, Baldy!" It was a feminine voice, pleasant, but somewhat flippant. The Inspector started. A flush of indignation spread over his face. He was sensitive about the few stray hairs carefully brushed across the white expanse of his head. Beside, he was inclined to be punctilious about maintaining a proper standard of official dignity. Across the room, his eyes fell upon a young slip of a girl who sat at a typewriter. On her head she wore the metal headpiece of a telephone operator, which was connected to a small switchboard at her side, and she was talking, not to the Inspector, but to some one farther back in the mountains.

"Side of bacon an' reg-u-lar tin rations for Baldy Lookout. I got chu, Lem *** but *** listen to Mary. Bacon once a day, d'hear? *** Sure they're orders. Didn't yu hear me? No candy life, this. *** G'wan, say it with flowers, boy. G'bye."

She turned to the typewriter and drove the keys as if her life depended upon speed.

The Inspector frowned and sheepishly sat down. He started to read his mail, but he was uncomfortably conscious of the girl across the room. Her feverish pounding of the typewriter was interrupted every few minutes by a call to "plug in," which she invariably did with a smile on her red lips and with the most engaging laugh as she talked to unseen callers back in the forest.



The Inspector finally abandoned his papers and watched the girl with an appraising and critical eye. He had been dropping into supervisors' offices throughout the West for more than ten years. He had studied the forest personnel, he thought, from every angle, but this girl was a new problem quite outside his sphere of experience or approval. Clearly he was displeased and he made a mental note to tell the Supervisor what he thought of his judgment in employing a girl of such flippant and frivolous demeanor.

She was young—certainly not over eighteen—and wore a georgette waist of brilliant hue, with a gaily striped and extremely short skirt, silken stockings of sheerest possible weave, and tiny, sharp-toed patent-leather slippers with three-inch heels. Her hair was bobbed and fluffed out, her eyebrows were plucked and arched in the most approved fashion, her cheeks needed no rouge, for nature had well attended to that matter, but her lips showed unmistakable signs of close intimacy with a lip-stick.

"H—m," was the mental comment of the Inspector, "a flapper if there ever was one! How on earth did she get into the Service?"

Under cover of studying the papers before him he watched her work. The clock on the office wall showed eight-thirty. Instantly she stopped

her typing, swung round to the switchboard and picked up a clip board on which was fastened a large printed form.

The phone was of the type now obsolete except in the back country. It required grinding by a small handle, and she ground it vigorously for a full minute—a long ring, the call that brings every lookout to the phone for orders or a report. Then into the mouthpiece she called: "Eight-thirty, boys; all ready? Here goes. Bear Peak? Right; Rose Mountain? Right; Twin Buttes? Right; Wild Cat? Right; Blue Ridge? Right; Cedar Mountain? Right; Baldy? Right; All on hand. Good-bye everybody."

The eight fire lookouts were thus found to be on duty at their several stations and the girl having duly checked them all off on the form, turned again to her machine.

Constantly was she interrupted by calls. B-u-zzzzzzz went the bell. "Yes, Mrs. Smith, good morning. *** Gone, has he? How long since? *** Over toward

Beaver Creek? *** All right, I'll tell Mr. Spear. How's the baby? *** Fine. G'bye."

Turning to the form on the clip she made a notation on it, meantime calling to the Supervisor in the adjoining room: "Mr. Spear, Mrs. Smith says Bob has just gone over toward Beaver Creek where he could see a little wisp of smoke rising in the timber back of the old saw set."

Back to her typing she went. Fully five minutes passed. Then she turned to the board and plugged in. "Yes, this is the office. *** Uhuh, this is Grace. *** Yes, go on. *** Three twenty-two? All right. Thanks. G'bye."

"Mr. Spear," she called again to the Supervisor, "Bear Peak reports smoke rising on three twenty-two. He thinks it's on Beaver Creek somewhere near the old saw set."

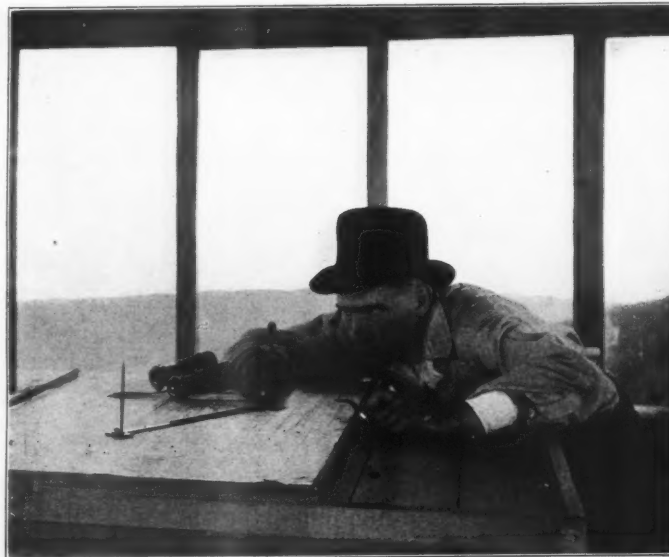
Instantly the Supervisor rose and went to a large map hanging on the office wall. It was a map of his forest and on it at intervals were large red circles, perhaps three inches across, with the 360 degrees marked clearly on its outer rim, beginning with zero at due north.

Each circle was named and in the center hung a small white ring. Taking the ring in the center of the circle marked "Bear Peak," he pulled out the thread to which it was attached which went through the map and played out as he pulled, held taut by a small weight at the other end.

He swung the thread round the circle until it crossed the outer rim at exactly three twenty-two, then drew it out five or six inches. It crossed Beaver Creek about four inches from the rim of the circle. There he placed a long pin taken from a small tin box at the bottom of the map.

"That's the same fire Ranger Smith has gone to, I'll bet a nickel," he remarked to the girl. "Ought to hear from Twin Buttes, if it is."

A moment later the phone shrilled into the girl's ears. "Hello, Mary," she called cheerfully to the one female fire lookout in the whole district. "What's doing? *** Yep, go ahead *** aw-right *** bears sixty-one. *** On Beaver Creek, you think? *** Uhuh, Bear Peak just reported it at three twenty-two. Beat you to it. G'bye, lady." Each forest lookout is provided with a plane table on which is fixed a map of the forest properly "oriented" and similar to the one in the Supervisor's office, except that there are no small circles.



"A PLANE TABLE ON WHICH IS FIXED A MAP OF THE FOREST. ON THIS IS AN 'OVERLAY' OF CELLULOID ON WHICH IS MARKED A LARGE CIRCLE DIVIDED INTO 360 DEGREES. THE ALIDADE IS SIGHTED LIKE A RIFLE"



"THE SUPERVISOR INSTANTLY WENT TO THE LARGE MAP ON THE OFFICE WALL AND DREW OUT THE THREADS FROM THE CIRCLES UNTIL THEY CROSSED THE OUTER RIM. AT THEIR INTERSECTION WAS THE FIRE"

On this is an "overlay" of clear celluloid on which is marked a large circle, perhaps eighteen inches in diameter, divided on its perimeter into three hundred and sixty degrees or points. The center of this circle is exactly over the point on the map where his lookout station is located.

Over this sheet swings an "alidade" balanced on a fixture so it can be swung clear round the circle. At one end of this alidade is a perpendicular sight or range finder with a small "peep-hole" near the top. The opposite end has a slender rod about the size of a lead pencil, which tapers to a sharp point, on which is a small ball about the size of a pin-head. The whole thing is quite like the "peep-sight" on a long-range rifle.

By swinging this range finder around the circle, bringing it so that the tip of the rod is in an exact line with the peep-hole as it bears upon a distant object, the lookout can report its exact location.

If one lookout reports a fire as bearing due east, and another lookout located we will say fifty miles to the southeast of him reports a fire as bearing northwest from him, the point at which the threads on the Supervisor's map intersect one another when drawn out on the readings furnished by each lookout show the exact location of the fire which naturally must be the same fire, but seen from different directions. With this instrument the location of fires has been reduced to an exact science.

Before the girl's last words

had been spoken, the Supervisor had drawn out the black thread from the center of the circle marked Twin Buttes, swung the thread around to sixty-one, pulled that thread out with one hand and with the other the thread from the circle marked Bear Peak. At the exact point where the two threads crossed, he placed the pin he had used to mark the direction reported by Bear Peak.

"Pretty work," he smiled at the Inspector. "Two lookouts caught the same fire within five minutes of each other, but the Ranger saw it from his station before either lookout caught it."

The Inspector nodded approvingly. The Supervisor turned to the girl.

"Did you get a report from the Duck Creek fire yet?" She shook her frizzled head.

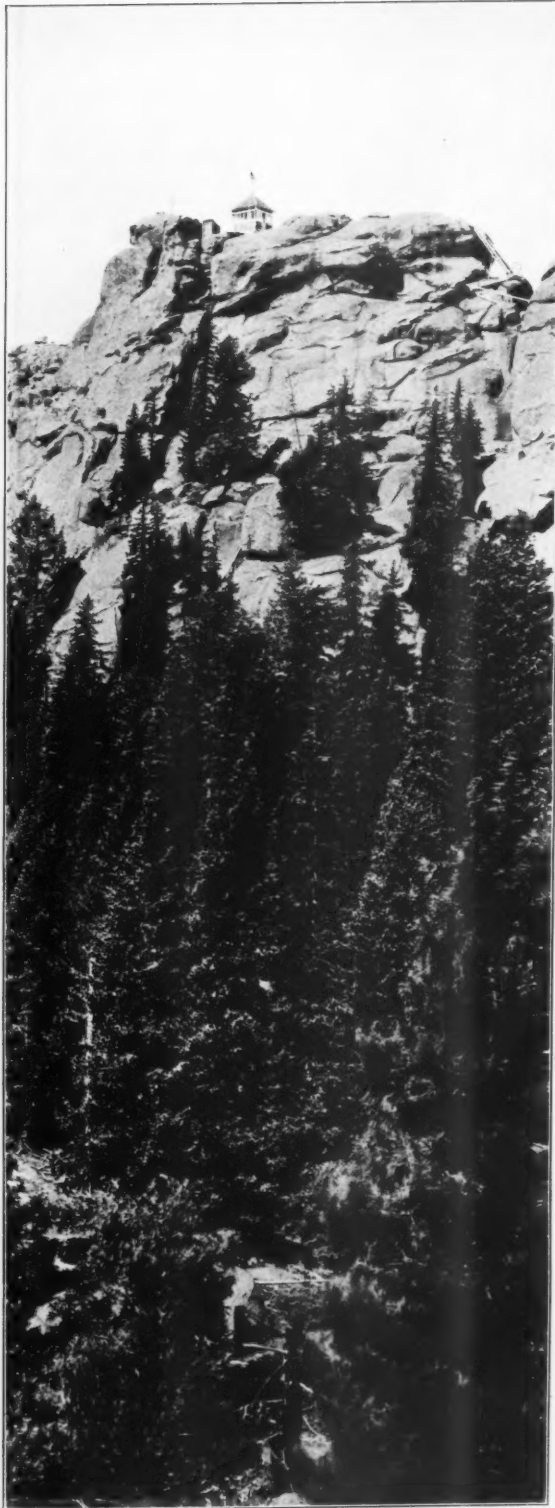
"I've tried three times, but haven't been able to get the Ranger. I'll try him again."

She turned to the board, plugged in and gave three short rings. A voice answered promptly. "How 'bout that Duck Creek fire?" she queried. "Got to have a report from you for the weekly fire report to the District office. * * * Half an hour? All rightee, kid, you know I'm bound to get that weekly report in today, so get busy—Goo'-bye." She gave that merry little laugh at something the voice said. "Don't get gay with Mother, sonny," she called back, "this is my busy day—'bye."

She slipped another plug into place. "Forest Super-



THE RESULT OF A SINGLE FIRE BEYOND CONTROL. IT IS TO PREVENT THE POSSIBILITY OF SUCH APPALLING WASTE THAT THE MEN OF THE SERVICE MUST STRAIN EVERY NERVE, AND IN THIS VITALLY IMPORTANT WORK SUCH ASSISTANTS AS "THE GIRL BEHIND THE FIRE LINE" ARE INVALUABLE



DEVIL'S HEAD FIRE LOOKOUT STATION ON THE PIKE NATIONAL FOREST IN COLORADO, THE HIGH POINT WHERE ONE OF THE FIRST OF UNCLE SAM'S "LADY LOOKOUTS" WAS STATIONED

visors' office," she said. "Oh, that you, Billy? * * * Quit your kiddin'. I'm fuller of biz than a hen with duck-lins'. Say, what was the total cost of that Wolf Creek fire? Gotta have it for the weekly fire report, what? * * * All rightee, shoot."

She copied on a slip of paper as she listened: "Seventy-six dollars, seventy-five cents," she repeated the item; then, "Off the line for a minute, Billy dear, there's Rose Peak lookout calling: Hello, Rose Peak. * * * Yep. * * * You got a smoke reading one hundred eighty? Aw-right; I got-cha: Steady there, one at a time, they'll last longer. Hell-O, Mary, you gotta smoke, too? Aw-right, let her come. * * * Three twenty-seven? O. K. George beat you to it by about seven seconds. G'bye, Mary; G'bye, George."

The Supervisor was at her side. She handed the slip to him with the figures each lookout had reported. He hurried to the map, drew out the two threads. "Hmm, that's a bad place for a fire." He turned to the girl. "Get me Apache ranger station." A quick movement of the plugs and she nodded toward the desk phone.

"Hello, Jim," he said, "Rose Peak reports a big smoke on one hundred and eighty and Blue Ridge one on three hundred and twenty-seven," he snapped into the instrument. "It's right in the middle of that big slashing on Elk Creek. There was an auto party camped there yesterday when I passed. Probably left their camp-fire burning. Go to it with all the men you can pick up at the sawmill. Keep us posted how things go, for we can't afford to let it get away from us in that neighborhood. Don't fail to find out what started it. The auto was camped under the big fir tree at the creek crossing. I noticed they had brand-new cord tires on both hind wheels. Won't be hard to trail 'em up. On your way. Good luck."

As he hung up, an auto stopped in front of the office. Out from it flew an excited woman who raced toward the door. "There's a fire burning along the road about five miles from here," she gasped.

"Which road?" the Supervisor demanded.

"The one coming down Deep Creek cañon," she replied.

"Can you give me an idea of its size?"

She hesitated. "Oh, as big—well, as big as the little park out there," rather exultingly at her method of measurement.

"I'll be there inside half an hour; many thanks for your thoughtfulness in telling us." The Supervisor turned to the girl. "Miss Smith, you'll have to run the office while I'm gone. I'll pick up three or four men and run them out in my own car. Don't fail to have that fire report ready to wire to the District Office."

Ten minutes later he boomed out of town in a cloud of dust toward the reported fire, his car carrying four men whom he picked up at the general store and a lot of

shovels, fire rakes, water bags, two or three spools of insulated wire, and a field phone set.

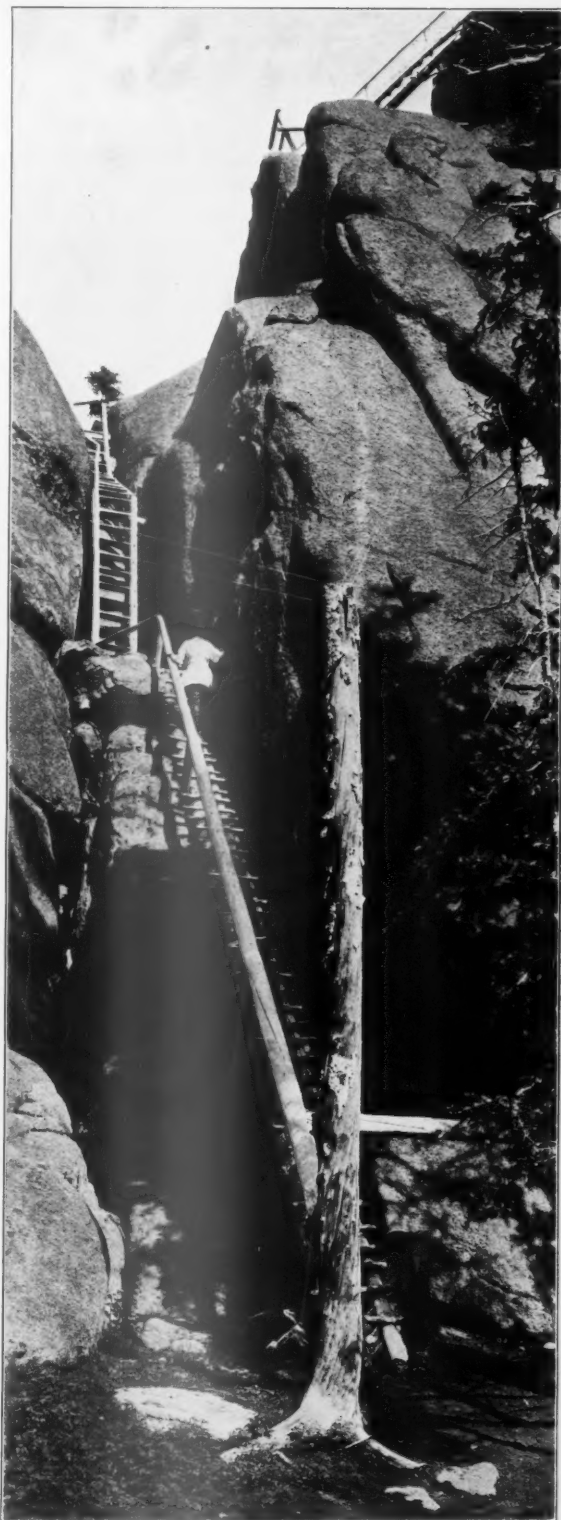
For fully ten minutes the girl rattled away at her machine without being disturbed by the phone. Then she turned and plugged in. The voice came from the Ranger in charge of a road-building crew working on a forest highway.

"Hello, George," she gurgled into the phone—if George could but have seen those saucy eyes—"what's your trouble, kid, this fine morning?" * * * "Short of grub, hey? * * * Gimme the list," she grabbed a pencil. "All rightee, let her come. Two hundred flour. Case tomatoes. * * * Uhuh, all water, gwan, case corn, twenty-five coffee, hundred sugar, case milk, two cases T. N. T., three pick handles, heaviest crowbar in town, * * * what became of the other one I sent out last week? * * * Fell over the cliff into the deep water, hey? Well, it's charged up against you on my property return, so you better go swimming and fish it up. G'wan—Three rolls fuse, two boxes caps number ten, six sets horse-shoes number two, heels and calks, three pounds horse-shoe nails, caddy matches, caddy each Bull Durham and Camels." * * * "Hey? * * * Yes, surest thing you know, they'll be loaded in one hour after the truck gets in. It's due about noon and it's eleven now. I'll get 'em right out of town with your stuff. Ought to reach you by dark. Oh, mamma, won't Joe say some naughty words when I tell him he's due to get out of town as soon as he can get gas and water and feed his homely face." Again that engaging laugh.

"Say, Georgie, did you know there was a dance set for next Saturday night here in town?" Her eyes were a study. "What—me? Sure I will," she spoke into the mouthpiece. "Got a new Montgomery Ward waist to wear that'll kill you dead when you see it. * * * All rightee, and thank you for the bid. So long, don't work too hard."

For five or ten minutes she kept the phone busy giving orders to the local merchants for the needed supplies for the road camp. "No," she said to an inquiry. "I can't come over and see the crowbar. No one here but me to run the whole works. George said he wanted a good heavy one—probably twelve pounds at least, I should say, and I know he wants the face to be not over three inches across and not drawn down too thin. And listen, George said don't send that — brand of tomatoes, for the last case was two-thirds water and the rest mush. Don't forget either that the horseshoes must have heel and toe calks. Get busy and get the stuff ready soon as you can. I'll send the truck after 'em not later than two o'clock. Get a move on you, G'bye."

An auto carrying a party of tourists stopped in front of the office. Out stepped a man. "Where did the road to Fort Apache turn off?—was there a good camping place about twenty miles out of town on the road to the mountains—how were the roads between Fort Apache



LADDERS LEADING TO THE DEVIL'S HEAD OBSERVATORY, AND THE "LADY LOOKOUT" ON THE FIRST LAP OF HER LONG CLIMB TO THE TOP. A POST REQUIRING PLUCK AND NERVE

and Globe—was there any trout fishing in the streams on the Apache Indian reservation and to whom do you apply for permits to fish and did it cost anything for a permit?" were some of the questions this human interrogation point fired pointblank at the girl and which she answered almost as rapidly and, as the Inspector knew, with excellent accuracy and good judgment. With a map of the forest in his hands and profuse thanks for the information, he left the office.

Again the phone disturbed her work. It was from the Supervisor who, finding the fire more than he could well handle, had cut in with his field-phone set to get help. The girl listened intently. "All rightee," she said crisply. "I'm on the job this minute. I'll see that they're Johnny on the spot. Nothin' more? I'm gone, G'bye."

A quick shifting of plugs, a violent winding of the crank, then; "Hello, that you Mr. Smith? Good. Now lissen—the Super is out at Deep Creek near the old "C C" ranch. He took four men, but says he's afraid they can't handle it—big wind blowing and there's a regular jungle of young pines there which he doesn't want to take a chance on losing. Dig up four or five men, will you, and send them out in a truck or car just as soon as you can. Come on over here to our storeroom when the car's ready and I'll give you some fire tools, bedding and a lot of cooking tools and emergency rations *** yes; fifty cents an hour from the time they leave till they get back. Your agreement with us covers the hire of the car, you know. Make it snappy now for the Super wouldn't squall for help unless he sure enough wanted it. Goo-bye."

Exactly twenty minutes later a car carrying four men and a driver shot up before the adobe store-house in the rear of the office. The girl was there almost as the brakes stopped their shrieking.

"Here you are, boys," as she unlocked the door of the store room, a list of the things they were to take in her hand. Rapidly she ran over the list and as rapidly were the articles placed in the truck—fire rakes, shovels, axes, water bags, a ten-men cooking and eating outfit complete in every detail, even to a cook's apron, already packed in a box for just such emergencies; another box with four days' rations for ten men, all nicely packed in a box, ten camp beds each rolled in a shelter tent and securely tied with a stout rope. As these went into the car she checked them on her list, item by item, snapped the lock to the door and with a wave of her hand toward the distant mountains, called out a cheery, "On your way, boys, don't mind the speed laws," as the car, muffler wide open, tore out of the yard in a cloud of dust.

Back in the office that everlasting, never-ceasing phone bell was splitting the air with its racket. She hooked the headpiece over her fluffy locks. "Hello—hell—O," she snapped into it. It was the Ranger in charge of a crew of men building a new phone line. She listened with a keen look in her eyes.

"Can't finish the last five miles with the money allotted to you? What's the matter with your estimates. ***

Made a mistake did you? Say, lissen to sister's words; the Forester doesn't pay you to make mistakes and money is mighty scarce around this office, I'll tell the world. *** Oh, of course; uhuh, that's what you fellows all say. *** How much you want anyhow? Not that I'm inclined to give it to you even if we had it, but just to see how far you did miss it in your figuring? *** Fifty? Sure that'll do? All rightee, wait a minute till I look over my allotment sheets."

For a few minutes she pored over a sheet of allotment cards on which were the various projects for which funds had been allotted for that particular forest. She added and subtracted; studied and pondered, made red ink notations on one card, rubbed out figures on others, took from this card and added to that, transferred funds from this card to that for the phone job. Then she turned to the instrument.

"Hello, Mac; Yep, I've dug up ten dollars from one fund, twenty from another and enough in fives to make up that fifty for you. Mind you, though, you'll get not another nickel, so make it last out or your name will be mud. Sabby?" A girlish smile spread over her bright face as she listened. "Oh, boy," she gurgled; "a whole box of candy next time you come to town. Well, don't be too long getting here. I'm short on candy. G'bye."

It was twelve-thirty noon. Off came the headpiece and the dainty fluffy ruffle apron she wore. At the basin in the corner of the room she washed her hands and with the aid of the little mirror in her vanity case stroked down the thin line of her manicured eyebrows, used the lip-stick with a free hand, fluffed up her bobbed hair, and dextrously went over her face and neck with her powder puff, paying especial attention to the pert little nose. On her head she crammed a most alluring felt hat, gave it the requisite pull-down on both sides and cocked it up in front. As she stopped for a moment in the doorway, a colorful silhouette against the bright outside light, she stood first on one foot and then on the other and polished her dainty pumps on her shapely silk-clad calves, then tripped off to lunch.

The Inspector from the Washington office had watched her every movement as she prepared herself for public view.

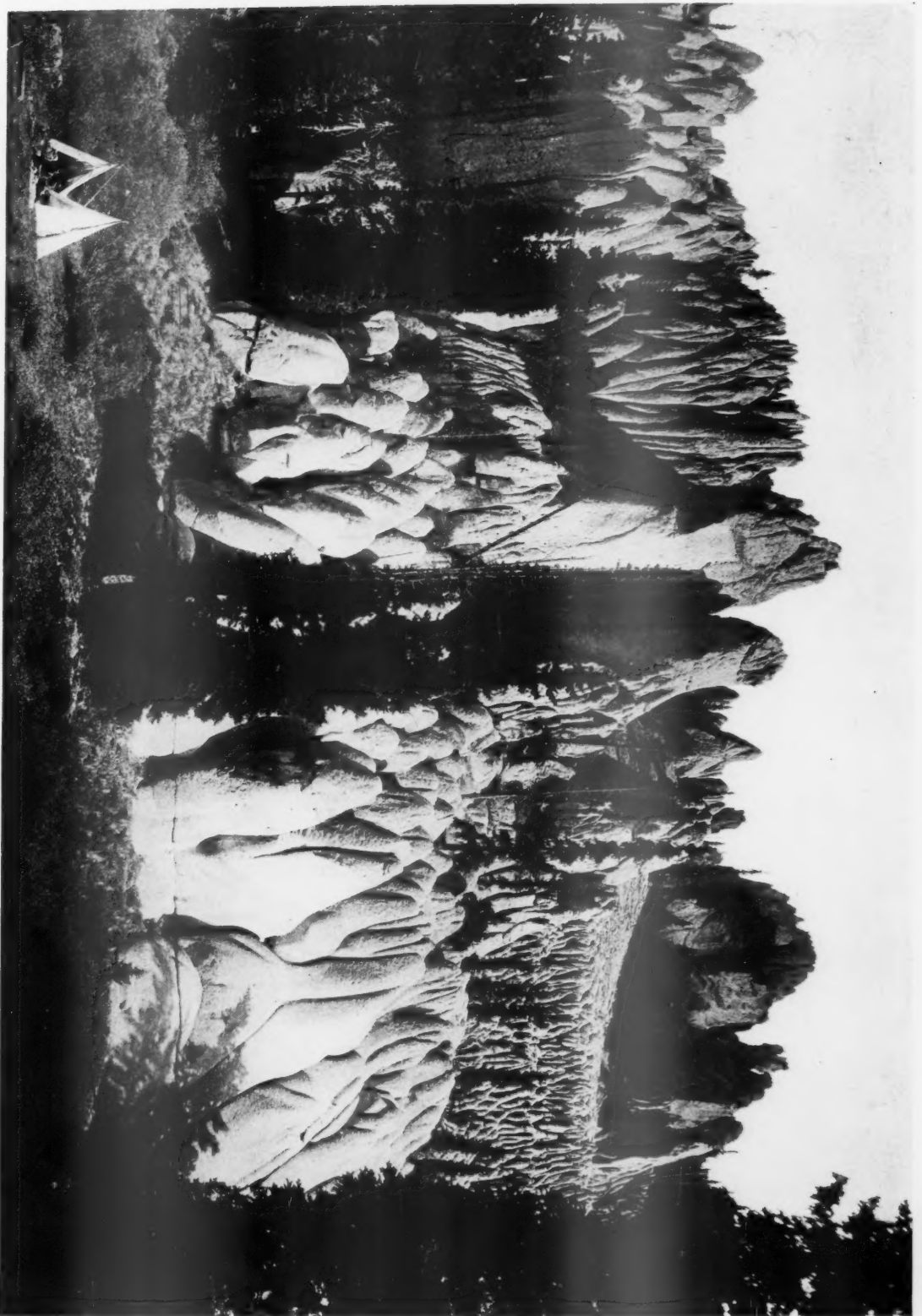
An odd look passed across his face. "You never can tell," he said to himself, "you never can tell. There are flappers and real women. Once in a while there's a flapper who is also a real woman. Maybe there's a whole lot of them. You never can tell. But—if all our men put into action the spirit of the Service the way that little combination of foolishness and good common sense does, what a Service we would have! She deserves a boost in salary and I'm blest if I don't look up her record and see what I can do for her."

Correction does much, but encouragement does more. Encouragement after censure is as the sun after a shower.—Goethe.

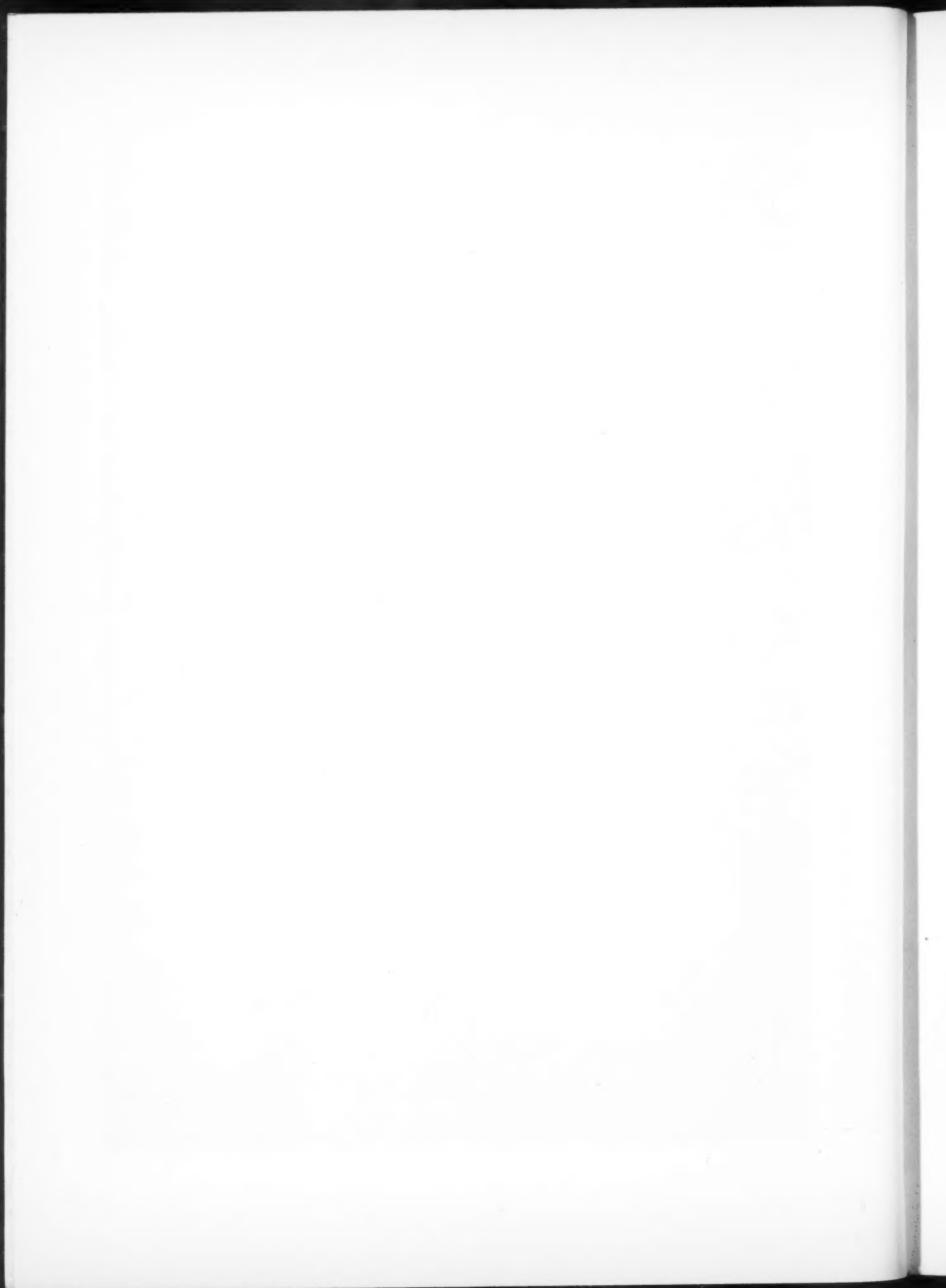




"Punch Bowl Falls"—Beautifully Situated on the Eagle Creek Trail, in the Oregon National Forest, Oregon



"The Ghosts"—Weird Rock Formations, Wheeler National Monument in the Rio Grande National Forest, Colorado





EDITORIAL



ADVANCING FORESTRY IN AMERICA

ATTEMPTS at formal expression of a forest policy for the United States have for several years aroused much discussion. Unfortunately this discussion has given undue prominence to differences of opinion. These, in the minds of many, have tended to block rather than to promote real progress. Meanwhile we are using each year four times as much timber as we grow. While Rome burns, not one Nero but several schools of Neros fiddle industriously, each insisting that the only way to arrive at harmony is for all the others to read from his score.

It is hardly to be expected that at this time all can agree upon every detail of a comprehensive national program of forestry and thus obtain at once full concord in advance on each and every successive step. A more rational plan would suggest an agreement upon the ultimate goal to which forestry in America should be advanced. Each step, each feature of legislation, each educational appeal, each intermediate objective, represents only a point of detail. Upon each of these there may or may not be universal agreement. Indeed, it is reasonable to expect that there will be minor differences of opinion at every step; but among a democratic people, accustomed to the principles and power of majority rule, such minority objections should not prove a serious obstacle to steady progress.

It should not be necessary at this time to elaborate our nation's forest policy beyond a mere formula such as the following: We should so regulate the use of our forests and our non-agricultural forest lands as to insure to our people, so far as possible and at the lowest practicable cost, a permanent supply of wood in location, quantity, and quality suitable to their growing needs. Certainly there is nothing in the foregoing to which every forester in America cannot heartily subscribe. Absolute agreement as to ultimate aims should not only be easy but should be

also conducive to agreement on many intermediate objectives.

Fortunately for the cause of forestry in America today, the Secretary of Agriculture is not only interested in the problem but actively urges affirmative action which would advance it far toward the common goal of our mutual desires.

In his annual report for 1922 Secretary Wallace deals with the forest problem of the nation in a forceful and constructive way. Most helpful of all are his suggestions on forest legislation. In clearest terms he indicates the following five things as proper subjects for remedial Federal action, three of which are referred to in his article on "Forestry and Our Land Problem" which appears elsewhere in this issue. First in importance, he urges the extension of our co-operative five protective system until it covers adequately our 450 million odd acres of privately owned forests; second, more complete co-operation with the States in growing and distributing forest-planting material; third, rapid extension of the purchase of forest lands under the Weeks law; fourth, inclusion within the National Forests of all lands in the unpreserved public domain better suited to timber growth than any other purpose; and, fifth, adequate provision for research in the growing and utilization of timber.

The foregoing appears to be absolutely sound as far as it goes and it also forms a program sufficient to require, until accomplished, all the energy of the profession and of others who realize the need for action. Is it not possible for the foresters of the country to get back of a movement to secure favorable action on the foregoing five propositions? Can we not all agree that they merely constitute five objectives, important but not all-comprehensive, in advancing forestry in America toward an agreed goal? If so, why not adopt the foregoing five objectives as constituting this year's forestry program?

ON WITH THE WEEKS LAW PROGRAM

AS a monument to the Weeks Law, signed by President Taft on March 1, 1911, there are today almost two million acres of National Forests in the eastern mountains of the United States. These areas are distributed from Maine to Georgia and form the nucleus of what must eventually be a much larger area of National Forests if our growing demands for timber, forest recreation, and water-shed protection are to be met.

During the first five years following the passage of the act, approximately \$2,000,000.00 were appropriated an-

nually to carry out the original plan of forest land acquisition. This plan contemplated the ultimate acquirement of six million acres on the water-sheds of important eastern rivers—one million acres in the White Mountains and five million acres in the Southern Appalachians—but the continuity of its execution was seriously interrupted first in 1919 when the appropriation was reduced more than one-half, and again last year, we believe unwisely, on the theory of needed economy, to \$450,000.00.

Again this year the Bureau of the Budget proposes to

hold down expenditures under the Weeks Law to a reduced and inadequate basis, although the opportunity for acquiring the forest land desired at low prices was never better. In his recent report the Forester points out that, with the field organization which effective work necessitates, and in view of the size of some of the forest holdings now offered at attractive prices, \$2,000,000.00 a year is the least that can be expended with complete efficiency. Its expenditure should add to the National Forests in the East four hundred thousand acres of land every year, and the Forester is authority for the statement that the expansion of eastern National Forests should not progress at a lesser rate.

Although the Weeks Law was passed eleven years ago and at that time contemplated the acquisition of six million acres as the least that be purchased within a period of ten years, that original program today is only one-third completed. In the meantime the area of privately owned forest land in the United States subject to denudation, fire damage, and erosion—the very conditions the Weeks Law was meant to remedy—has expanded enormously. This is appallingly evident by a comparison of the area brought under public control and protection during that period by all public agencies exclusive of the public domain reservations, with the total acreage cut over,

burned or damaged by erosion. The former acreage aggregates ten million acres, the latter approximately seventy million acres. In other words our present progress is only one-seventh of what it should be in order to keep pace with current forest devastation.

AMERICAN FORESTRY believes that it is mistaken economy to curtail expenses for a project of such vital national importance as that represented by the Weeks Law. That law has indeed become a corner-stone of American forest progress which President Harding himself in a message to Congress on December 8 declared to be of vital national importance. Aside from the benefits derived from the creation of eastern forests and protection of eastern waters, fish, game, and forest recreation, the law has been instrumental in stimulating co-operative efforts on the part of twenty-eight States to provide better protection against forest fires and to acquire under State ownership wild forest lands best suited to forest and related interests.

Hearings on the item in Congress will probably be held this month. The appropriation must be increased. It should be restored to its original figure of \$2,000,000 annually. It is our duty as good American citizens to let our Congressmen know how we stand with respect to legislation of such vital importance.

FORESTRY IN NEW ENGLAND

DURING the last week in December several important meetings were held in Boston, which served to focus public interest on forestry in New England. During that week, the Society of American Foresters and the New England Section of the Society held their annual meetings; a New England Forestry Congress took advantage of the twenty-fifth birthday of the Massachusetts Forestry Association to celebrate the progress so far made and to plan for still further achievement in the future; and last, but not least, the Section on Social and Economic Sciences of the American Association for the Advancement of Science, under the leadership of Colonel Henry S. Graves, held a symposium on conservation, in which forestry played an important part.

Most of us probably do not appreciate how vital a place the forests of New England occupy in its agricultural and industrial development. Three-fourths of the State of Maine and two-fifths of Connecticut are today classed as forest land.

After three centuries of development New England as a whole still has a forest area of 27,807,000 acres as compared with a farm area of 16,990,000 acres, or 6 per cent more forest than farm land. The area of forest land is more than four and one-half times the area of improved farm land. Maine today cuts more eastern white pine lumber every year than any other State except Minnesota. Massachusetts produces nearly twice as much pine as does the State of Michigan.

New England's problem is to see that its forest lands, by being kept continuously productive, are made to play the part which they can and should play in the economic life of the region. Past failure to practice forestry is to a large extent responsible for the abandonment of farms and the disappearance of wood-using industries, which in turn have led to the decline of so many rural communities. If its forest lands were today producing to the full extent of their capacity, New England would be more independent, more prosperous, and better developed, both agriculturally and industrially, than is now the case; and incidentally it would not be paying a freight bill of millions of dollars every year for the importation of yellow pine from the South and of Douglas fir from the far West.

Real forestry progress, however, is being made in New England. Many associations, corporations, and individuals are alive to the situation and are active in their efforts to remedy it. Special mention should perhaps be made of the Massachusetts Forestry Association and the Society for the Protection of New Hampshire Forests. Each of the New England States now has a State Forestry Department, which has the cordial support of both timber-land owners and the general public. But increased appropriations, and in some cases additional legislation, are essential to enable these departments to function more effectively.

GUARDING OUR WATER-POWER RESOURCES

FOR years the National capitol has been the stage for a bitter legislative fight over the water-power resources of the country. The battle to save them for the people was begun by Theodore Roosevelt and though death overtook him before the fight was won, let it be said to his honor that there is on our Federal statutes today a water-power act, passed in 1920, which safeguards public rights in the ownership of one of our greatest natural resources.

But that the principles of the law are still threatened is evidenced by the recent formation of a national committee of very eminent men to stand in defence of the act. Among the members of the committee are James R. Garfield of Cleveland, Walter L. Fisher of Chicago, and John Barton Payne of Chicago, former Secretaries of the Interior; Henry L. Stimson of New York, Lindley M. Garrison of New York, and Newton D. Baker of Cleveland, former Secretaries of War; David F. Houston of New York and Edwin T. Meredith of Des Moines, former Secretaries of Agriculture; Governors Henry J. Allen of Kansas, Joseph M. Dixon of Montana, and John M. Parker of Louisiana; Gifford Pinchot, Governor-elect of Pennsylvania; Henry S. Graves, head of the Yale Forest School, until recently Chief of the U. S. Forest Service; Herbert Knox Smith of Connecticut, former Commissioner of Corporations; William Kent of California, former Congressman, and other prominent conservationists.

The water-power act of 1920, the committee points out, embodies the principles of conservation and thereby protects the public interest in securing full development without having to pay monopoly profits. It does this by requiring:

(1) That every water-power lease shall be limited to a maximum of 50 years.

(2) That the lessee shall pay the Government a small rental for the power privilege when he builds his own dam and other works, and a larger and fair rental when he uses works constructed by the Government.

(3) That the lessee must submit to regulation by State authority, or if there is no State authority by the Federal Power Commission, of the services he renders and the price he charges for light and power.

(4) That any excess profits over a fair liberal return on the actual investment shall be made over to the public in the form of a reduced price for the lessee's works at the end of his 50-year term.

(5) That States and cities have first call on power sites.

"It is significant," declares the Secretary of the committee, "that the foes of the Federal Water Power Act do not appear to include the large group of interests which are the main investors in and developers of water-power. These formerly antagonistic interests now, as a rule, admit that the act is practicable and are willing to develop water-power under its provisions."

But public attention and watchfulness, the committee points out, has been diverted from its water-power properties by problems of war and reconstruction. "The public is forgetting or has forgotten—must, in fact, be informed all over again on this question—so that the act may crystallize, by practical operation for some years, into a settled and unquestioned policy. For this leadership is needed, and this will be the committee's first task."

Only a small part of the enormous water-power resources of the country has been developed. Some eighty-five per cent of the developed power remains under the control of the Federal Government, of which thirty-one per cent are on sites in the National Forest. Our water-powers stand as one of our greatest and most valuable natural resources, and the long fight once won, there must be no back step—no relinquishment of watchfulness. The personnel of the committee alone should inspire confidence and support of the public service which it has voluntarily undertaken.

FOREST TAXATION IN MINNESOTA

A BETTER appreciation of the real economic situation surrounding the vast areas of idle cut-over forest lands to be found throughout the Lake States, as elsewhere, is bringing many to a realization that, if most of these lands are to be productively used in the immediate future, it will be for a forest crop, otherwise no crop at all. That economic conditions rather than taxation and the like control, and will always control the utility value of these lands, must be conceded. Nevertheless, it should be entirely obvious that inadequate fire protection, unfair taxation, and similar adverse conditions are negative influences in the path of economic progress in forest utility.

It is gratifying to note that interest in improving the methods of taxing forest property is clearly manifest in

Minnesota. The people of that State will do well to support those business men who have been far-sighted enough to see the necessity for doing something and are going ahead. The Rotary Clubs of northern Minnesota, under the leadership of the Duluth and Cloquet Clubs, are backing the movement to rationalize the tax system so that those who want may utilize their lands for forest production on as nearly equal tax terms as possible with productive efforts in other lines.

The plan they are backing provides for establishing a commercial forest tax district under control of the State Tax Commission and comprising such forested or other unimproved land therein as is suited to growing forests

[Continued on Page 52]

Interesting Paragraphs from the Chief Forester's Report

On December 19th the annual report of Col. W. B. Greeley, Chief Forester of the United States, was released, and the following paragraphs are selected from its many interesting and informative statements.

The accessible timber of the world is inadequate to the requirements of modern civilization. We now draw one-third of our paper from Canada. The northeastern paper mills have already been seriously handicapped by the embargo against the export of pulpwood cut on crown lands, which form a large part of the Canadian forests. There is likelihood that this embargo will be extended to all forest lands in the Dominion, completely shutting off raw wood from Canada as a source of supply for the paper industry of the United States. This illustrates the hazard of becoming dependent upon foreign supplies of timber.

* * *

Apparently what the people of Alaska want is not the power to run the Government's business or property in Alaska but power to run their own business. They do not object to the two National Forests in Alaska being administered just as National Forests are administered elsewhere, but they want to make their own laws, levy their taxes, and spend their own public money just as do the people in the States. In short, what Alaska wants is not that the Union should be ousted from the Territory, but that Alaska should be admitted to the Union.

* * *

Motors and good roads have combined to effect a radical change in the outdoor recreation habits of the American people. Vacation time is now a period of free movement, nomadic enjoyment of widely separated scenes, and of simple living in the open. Rich in scenic beauty and natural charm and offering the primitive attractions of the wilderness, the National Forests afford an incomparable field for the indulgence of this wholesome tendency toward rational play and physical improvement. Within their limits travelers by motors, by wagon, on horseback, or on foot, campers, hunters, and fishermen, amateur photographers, mountaineers, berry pickers, naturalists, and everybody else who wishes to come have equal opportunity. Care with fire and cleanliness in camp are the only requirements imposed upon their sojourn. The wide distribution and extent of the National Forests and their proximity to thousands of cities and communities make them natural centers of summer recreation, particularly for the masses of people whose vacation must be inexpensive. Between 5,000,000 and 7,000,000 people visit the forests each year.

If it is folly to grow timber merely to be burnt, it is equal folly to grow it to be wasted by ignorance or indifference. Nowhere in American life is waste more conspicuous than in our forests and forest products. In all the stages of manufacture—the woods, the sawmill, the wood-using factories, the building trades, wherever wood is used—there is waste, appalling in its aggregate. American business has begun to see the vital importance of better methods of manufacturing and using wood; it recognizes that wood saved is equivalent to wood grown; it perceives that high prices and growing scarcity must soon make economy imperative; and it desires to be shown how waste may be curtailed.

* * *

Every year makes the forest problem of the United States more clear. Its main features are:

1. The rising cost of timber products due primarily to heavier transportation charges from more and more distant sources of supply.
2. The unproductive condition of immense areas of land which are not adapted to agriculture.

* * *

During the last six years the Forest Service has made an attempt to secure nation-wide information on the forest-fire situation. These data indicate that the number of forest fires averaged 33,500 annually. The area of forest land burned was 7,088,000 acres annually, and the immediate property loss was \$16,424,000. The number of fires in 1921 was 38,400, which is more than the average, but the area of forest land burned in that year, 4,737,000 acres, was considerably under the average for the 6-year period, though the year was very dry and the fire hazard extreme in some portions of the country. It is significant that in the southeastern group of States—North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi, of which only North Carolina is organized for forest-fire protection—the area of forest land burned in 1921 was 58 per cent of the total in the United States, and the damage to timber was 49 per cent of the total damage in the country.

* * *

Forest Service investigators have recently completed a unique and exhaustive compilation of the forest resources of the world. Not the least startling of its revelations is that so far as our great structural and all-purpose woods—the softwoods—are concerned, we must become self-sufficient or go without. There is an immense reservoir of

hardwoods in the Tropics, hardwoods which can be used for limited and special purposes and secured at mahogany prices. But the struggle for the world's supply of softwoods will become more and more intense, and those nations will fare best that prudently use their suitable waste lands for growing coniferous woods. This study rudely shatters the dream of those who rely on importing the timber we need when our own is gone.

* * *

The outstanding feature of the Weeks law work during the year was the formal establishment of the Allegheny purchase unit, embracing 440,000 acres on the upper headwaters of the North Fork of the Allegheny River in Pennsylvania. This unit constitutes the basis of what eventually will be another Eastern National Forest. Its establishment extends Federal activity in protecting the watersheds of the Ohio River drainage, and is a forward step in the promotion of reforestation and the consequent perpetuation of forest industries in northwestern Pennsylvania.

The new forest is situated at a point where problems both of watershed protection and of forest perpetuation reach a climax. Not far to the south lies Pittsburg, whose serious flood losses have necessitated unprecedented flood-control measures, involving most elaborate and expensive engineering plans; and below Pittsburg are other great cities whose losses of life and property due to floods have been sources of national concern. There is scarcely another region in the United States where the perpetuation of timber supplies is more important; for in a radius of 100 miles there are thousands of wood-using plants, representing investments of millions of dollars.

* * *

As a first step in determining the requirements of wild life on the National Forests, an effort has been made to secure reliable data on the number and species of game animals. Estimates so far submitted on the more important big-game species indicate that the National Forests contain nearly half a million deer of several species, reported as existing on eighty-six forests. Elk formerly

occurred in nearly every State, but the larger number are now confined to National Forests and National Parks in fourteen States. Of a total of 72,000 elk reported in existence in the United States several years ago, a majority find range on the National Forests some time during the year. The once large herds of antelope found in all Western States have been almost annihilated, but the 2,400 head now existing on the National Forests in ten States constitute the nucleus of future herds. A total of 13,000 mountain sheep in eleven States, and 10,000 mountain goats in four States are reported. A few representatives of many other big game species are still found in widely scattered sections of the National Forests, while fur-bearing animals under protection show a remarkable increase in most localities.

* * *

The National Forests comprise nearly 157,000,000 acres of land in the most rugged and isolated parts of twenty-six States. The forest ranger manages an average unit of 155,000 acres, and the forest supervisor an average unit of 1,060,000 acres. The type of country in which these men work varies from the flat pineries of Florida to the roughest and most inaccessible mountain ranges of Idaho or the rugged coast of southern Alaska. The nature of their duties varies from putting out fires and building trails in vast, unbroken, and undeveloped stretches of virgin forest to serving the multifarious needs of urban and industrial centers on National Forests adjacent to them. The clientele of the National Forests is as varied as their resources and topography. In some ranger districts the principal concern is the selling and cutting of timber where the demand exceeds the supply and the rate and methods of cutting must be closely controlled. In others present users are chiefly stockmen and the immediate problems are the allotment and efficient use of pasturage. On still other districts the demands of the recreation-seeking public necessarily claim a large share of the forest officers' time and thought. The nine hundred-odd ranger districts in the National Forests present almost every conceivable variation in the nature of the resources and the kinds of public needs.

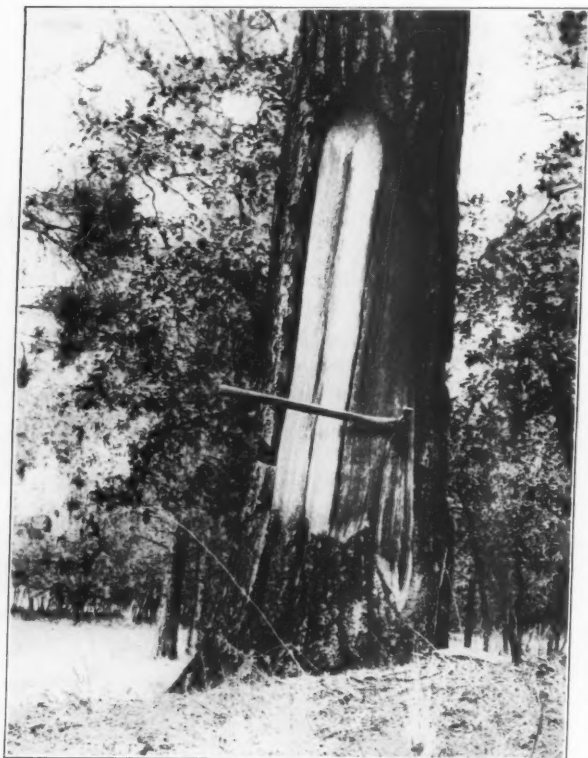
Announcement of the Annual Meeting

The Annual Meeting of the American Forestry Association will be held in New York City on January 17th, at the Hotel Commodore. Arrangements have just been completed to make this gathering the occasion of a joint meeting of the American Forestry Association and the New York State Forestry Association. The principal event of the day will be a luncheon at noon, at which a number of men prominent in forestry and other outdoor movements will speak. Members are cordially invited to come and bring their friends. It will be appreciated if those who plan to attend this luncheon will notify Mr. O. M. Porter, at 18 East 42nd Street, New York City, before January 16. Reservations are now being made at \$2.00 a plate.

Indian Peeling in Western Yellow Pine

By WALTER J. PERRY

A VERY common query of tourists and others on their first trip into the Southwestern forests is, "who peeled all those big pine trees, and for what reason?" They refer to the yellow pines commonly found around the edges of open parks and mountain valleys, which have had from half to three-fourths of their bark removed up to seven or eight feet from the ground.



MUTE EVIDENCE OF AN OLD INDIAN CUSTOM

A thrifty 22-inch pine, about one hundred and fifty years old, when it was "peeled" three-fourths of the way round some seventy years ago.

This is the explanation: On the Carson National Forest in northern New Mexico there was, within the memory of living men, quite a large Indian population, consisting of Navajos and occasional roving bands of Utes, Apaches, and Comanches. These were gradually dispossessed and pushed back by the Mexican settlers coming in from the south up the valley of the Rio Grande, so that the last remnants of the original inhabitants disappeared to the arid west about forty or fifty years ago. Formerly these people, or some of them, cultivated patches along the lower valleys of the various mountain streams and made their winter homes there. In the summer they spread out into all the little mountain valleys, and signs of these camps are very abundant. One of these signs is the peeled trees referred to.

From the best information obtainable from old settlers, Indians and others, it appears that the Indians removed the dry outer bark of the trees by means of stone hatchets, after which the inner bark or cambium could easily be stripped off. This was dried and roughly ground by means of the *metate* and used as a substitute breadstuff to eke out the scanty supply of corn raised in the valleys, which, to judge by corn-cobs found in the once-inhabited caves, was of very poor size. The peeling of the bark was done in the early summer when the sap was flowing freely and the bark was easily removed. At this season the cambium is tender and quite palatable, being of sweetish taste and slightly aromatic, and is probably nutritious.

The accompanying photograph is of one of some 30 or 40 peeled trees around one old summer camp ground. The tree shown was a thrifty 22-inch pine, about 150 years old when it was peeled three-fourths way round in 1852—70 years ago. Since then it has continued thrifty and now measures 38 inches, while new wood has overgrown and covered the old wound for a distance of 8 inches on each side of the face.

Losing its bark half or three-fourths way round in this manner does not appear to injure the trees seriously, as resin is promptly exuded, which effectually protects the wound against the entry of wood-rotting fungi, and the peeled wood rapidly fills with pitch, rendering it probably stronger than it was originally.

It is notable that the Indians practiced forest conservation, for while they had the whole forest to work on they very seldom, if ever, entirely girdled a tree but always left sufficient bark to keep it alive. Accordingly, for the Indians' purposes, no injury was done the tree as it continued to live, grow, and bear seed, but the paleface sawmill operator of today frequently makes the Indian the subject of very uncomplimentary remarks when he finds one side of a nice clear butt log, from which should come his highest-grade lumber, "cat faced" as a result of the peeling, while the remaining lumber in the lower half of the log is liable to run to lower grades on account of the pitch accumulation.

New Year's Resolution for Every Member

Resolved:

That in 1923 I pledge myself to secure at least one new member, to the end that our membership may be doubled, our influence extended, our power for good increased, and the importance of the work the Association is doing be more deeply impressed upon the minds of the great American public.

Wildfowl Lore

By R. W. SHUFELDT, C. M. Z. S., ETC.

Fellow of the American Ornithologists' Union

(Photographs and Drawings by the Author, with Figures by Fuertes and Audubon.)



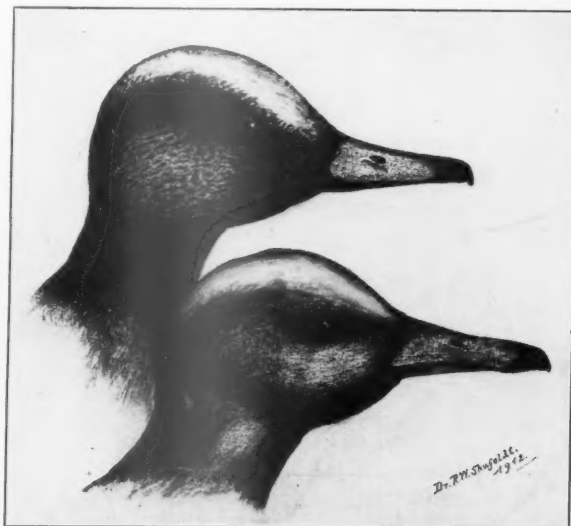
WRITERS on birds include under the term "wildfowl" all the various ducks, geese, and swans of the world's bird fauna. Representatives of this group, totaling more than two hundred recognized species, inhabit all parts of the globe. But all do not agree—at least sportsmen do not—that the mergansers are entitled to a place among true game or those wildfowl legitimately considered among the ducks and geese. The published literature on this group is wonderfully extensive, including, as it does, an endless amount in books and journals devoted to sport and dating back almost to the days when printing first came into vogue.

The anatomical structure of many of these birds is both curious and interesting and has claimed the labor of many minds and pens. Finally, a very great deal has been published on the natural history and classification of the group, including their geographic distribution, together with the extinction of certain species.

This article, however, will be confined principally to the description of a few of our wild ducks that are not as well known as such forms as the wild Mallard, the Canvas-back, the Red-head, Buffle-head, and a few others, all of which are generally exposed for sale in our markets during the hunting season. So, too, with the figures, the majority of which are of ducks with which the general

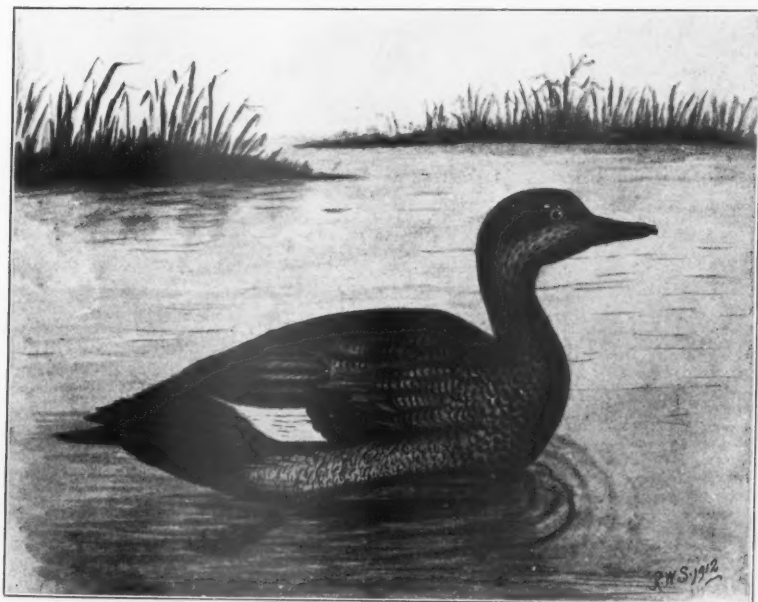
reader is not as familiar as with the various species just mentioned.

For many years I have hunted our wild ducks in differ-



RELATED DUCKS FROM TWO SIDES
OF THE ATLANTIC

FIG. 2.—Heads of Widgeons; the upper one is of the Baldpate or American Widgeon, and the lower one of the European Widgeon. Both are first-class game birds and, as wildfowl, are much hunted by our gunners. They are saddled with some nine vernacular names.



A WIDELY KNOWN WILD DUCK

FIG. 1.—A male Gadwall, reproduced from a water-color painting by the author. This is a great favorite with sportsmen, and is frequently seen in our markets. It is known under many vernacular names.

ent parts of our country; so I have shot Red-head, Canvas-back, all three species of Scaups, Ring-necked Duck, Goldeneye and Buffle-head, Old Squaw, Scoters, Ruddy Duck, Black Duck, Mallard, Gadwall, Widgeon, all three species of Teal, Shoveler, and Wood Duck. I have never collected any of the lovely Eider Ducks because I have not been in the countries they inhabit.

Mallard shooting does not appeal to every one, for the reason that the bird is simply the counterpart of the common barn-yard duck. In fact, it was from this species that we originally obtained the domesticated bird. It has more than a dozen vernacular names, used by gunners over various parts of its range, as wild Mallard occur nearly all over North America.

The Mallard builds on the ground, making a nest of any loose stuff that may be handy, and carelessly finishes it off with feathers. Coues, who gives us

the size of the eggs of this duck but not the number, says that they are "smooth, yellowish-drab, or some similar dingy color." Wilson tells us that "the nest is usually placed in the most solitary recesses of the marsh, or bog, amidst coarse grass, reeds, and rushes, and generally contains from twelve to sixteen eggs, of a dull greenish white." This is the correct account of the nest of a Mallard, of its nesting-site and the clutch of eggs, in so far as my observations go.

The species known throughout the States as the Black

cies of our wild ducks, special reference being here made to the Teals, the Wood Duck, the Dusky, and the Mallard. The etymology of the name Gadwall is not known. As early as 1667 it was Gaddel, and later Gadwale, Gadwell, Gadwal, and finally as it is now spelled, Gadwall.

One of our most beautiful wild American ducks is the Baldpate or Widgeon (Figure 2), which, in its plumage and general appearance, is more or less unlike the European Widgeon; the latter has been taken on various occasions along the Atlantic and Pacific coasts of the United States



AMONG OUR SMALLER RIVER DUCKS NONE ARE GREATER FAVORITES THAN THE TEALS

FIG. 3—There are three species of our Teals shown here: the one with the crescent in front of the eye is the male of the Blue-winged Teal, the female being shown on front view in the center. The dark-colored bird upon the log is a male Cinnamon Teal, a beautiful Western species, while below on the water, looking up, is the male of the Green-winged Teal, the female of which is on the log in front of the Cinnamon Teal. Occasionally the European Green-winged Teal visits our Atlantic Coast, but not often.

Mallard or Black Duck is really the Dusky Duck of popular ornithology, and one of the best fowls we have for the table. In the old days they were very abundant on Long Island Sound, but not now. There are two subspecies of this form described, namely, the Florida Duck and the Mottled Duck of Texas.

The Gadwall, represented in Figure 1, is one of those ducks having a range extending over many parts of the world, though it is largely a western form in this country. Years ago it was very abundant on the western lakes and a favorite game bird, being known by many common names, as Gray Duck, Speckle-belly, Gray Widgeon, Bleating Widgeon, Creek Duck.

The Gadwall is readily domesticated, as are many spe-

from 1886 to 1899. Our Widgeon is, as in the case of so many other wild ducks, saddled with some nine or ten names, bestowed upon it by gunners and others, some of them being not only unpleasing, but quite ridiculous, such as Smoking Duck, Wheat Duck, and so on.

American Widgeon winter down through Mexico and Latin America, and probably also migrate to some of the islands of the West Indies; while during their migrations through Wyoming in the autumn months of 1878 and 1879, I shot them on the sloughs of the Laramie River. Wilson states that this duck sometimes alights in trees; but I have never seen an instance of this, though several species of our ducks have that habit; and, as is well known, our two species of tree duck breed in the hollows



SEVEN SPECIES OF WELL-KNOWN AMERICAN DUCKS

FIG. 4.—One of our most beautiful Sea Ducks—the Harlequin (male). FIG. 5.—Male of the American Widgeon or Baldpate, a favorite game bird. FIG. 6.—Pintails range throughout North America and are one of the most beautiful birds of the entire group. FIG. 7.—Few of our Sea Ducks are known by as many names as the little black and white “Buff-head”—the one here shown being a male. FIG. 8.—Cinnamon Teal, male, is an abundant species in the West and in South America. FIG. 9.—A male Long-tail Duck in winter plumage. FIG. 10.—A duck somewhat resembling a Mallard—the male of the Shoveler—is so named for the manner of feeding with its big bill. In the circle is a male American Eider Duck and a pair of Harlequins, male and female, adapted from one of the attractive and accurate plates by Fuertes. The other figures in the plate are from photographs by the author, secured through the courtesy of the United States National Museum.

of trees, high up from the ground and often a long distance from water. When the young are hatched, the old birds take them, one by one, in their bills, and carry them to the water. Our Wood Duck does the same thing, as most of our ornithologists have noticed and described.

Most writers on North American birds, including the compilers of the official Check-List, place tree ducks among the geese, which is an error, although some of their characters point to the fact that they possess considerable affinity with them. It would seem not to be very scientific to call birds "ducks," and at the same time list them with the geese. In years gone by, these tree ducks were very abundant on the Rio Grande, and they may be more or less so still. They range southward through Mexico into South America, and are much prized for the table everywhere. One of them is known as the Fulvous Tree Duck, and apparently by no other vernacular name—in this country at least. Upon the other hand, the other species is not only called the Black-bellied Tree Duck, but also the Autumnal Tree Duck and other names.

Taking into consideration all of the various species of ducks that we have, there is no more interesting group among them than the forms which have long been known by the name of Teals. These are also represented in the Old World bird fauna, and the one listed as the European Teal has, upon a few occasions, been taken in this country as a "straggler." Aside from this we have three species of American Teal, namely, the Green-winged Teal, the Blue-winged Teal, and the Cinnamon Teal. The European Teal just mentioned more or less resembles our Green-winged Teal, so many have designated our bird as the American Green-winged Teal. Others know it simply as the Green-wing, as both it and the European species have the "speculum" of the wing a rich green. This speculum, as it appears on the wing of a duck, is here well seen in Figure 8, where it is pure white. Quite a number of wild as well as domesticated ducks possess this color ornament

on the wing, and it is generally of a brilliant green color.

Teals are small birds with interesting habits and rich plumage, while certain foreign species of them, such as the Chinese Teal or Mandarin Duck, possess a wonderful plumage in the matter of color as well as in unusual feather-structure. They have been domesticated to some extent in the United States, and beautiful living specimens may be seen in the "fowl-pool" of the National Zoölogical Park.

The head of our Green-winged Teal is of a rich chestnut color, passing to black on the chin. Behind each eye there is a very glossy green area, passing to black on the neck behind; hence this bird has also been called the "Red-headed Teal." The flanks and upper parts are whitish, marked with fine, transverse, wavy lines of black, while below, the plumage is white and spotted with black. Green-winged Teals are found, or may be found, in any part of the United States, while in winter they migrate as far south as Central America.

Our Blue-winged Teal is a somewhat larger species as compared with the Green-winged one, and the plumage is quite different. It is also known by such names as the White-faced Teal and Summer Teal, and it may be readily recognized by the pure white, black-edged crescent in front of either eye. As to its habitat, a writer says that it occurs in "North America, chiefly east of the Rocky Mountains; scarce on the Pacific Coast; winters South and to West

Indies and northern South America; in summer north to high latitudes, but also breeds indefinitely in its United States range."

On a beautiful day late in autumn, I was about to enter the "Milk-Ranch" canyon, not far from Fort Wingate, New Mexico. The sides are of great height and nearly perpendicular in most places. Suddenly there flew out of it, and directly toward me, a flock of some eight or ten small ducks. Three of them flashed a brilliant chestnut in the sun, and the sound caused by their wings made a



A PAIR OF PINTAILS

FIG. 11—This beautiful plate, copied by the author from a colored one by Fuertes, gives in the most effective way the differences in plumages of the sexes of this species and the manner of their flight.

perfect roar, being reflected, as a sort of echo, from the walls of the canyon. Being accustomed to the sound, it did not in the least disconcert me, or prevent me from taking a crack at that little bunch of ducks as they shot by. Three of them stumbled stone dead to the shot, and one of these was a male Cinnamon Teal of great beauty. This was 'way back in the early eighties; and I have not seen a live Cinnamon Teal since, though I have, from time to time, seen Green-wings. Indeed, last winter I flushed a fine male of that species on Piney Branch, which runs into the "Zoo," not over fifteen hundred yards from my home.

The adult female of the Cinnamon Teal closely resembles the adult female of the Blue-winged species—indeed, it is not easy to tell them apart, even when we have specimens of both in our hands. This is rather remarkable, in view of the fact that the male birds are so utterly unlike in the matter of plumage.

In our official list of ducks, we meet with the name of Ruddy Sheldrake; but this is an Old World bird, catalogued as North American only through courtesy, as a specimen was at one time collected in Greenland—and perhaps elsewhere since.

In the Shoveler (Figure 10) we have a wonderfully fine duck—not only for hunting, but for the table. The male has a glossy green head like a drake Mallard, and its bill is large, long, and broad. Its breast and lower neck is pure white, while the abdomen is of a rich chestnut shade, glossed with purplish. The shoulders are sky blue and the speculum an elegant green; the under tail-coverts, together with the rump, black. In the female the colors are much duller; moreover, the head and neck are pale brownish and speckled. As the male Shoveler only assumes full plumage during the brief breeding season (at other times having the plumage of the female), it so happens that it is rarely taken in full nuptial dress. I have personally shot many of these "broad-bills," but I do not remember having bagged a full-plumaged male. They are rare on the Atlantic Coast; far more abundant westward, especially on the rivers west of the Mississippi. In the old days thousands of them flocked on the streams of Wyoming and southern Montana.

In Figure 6 is shown one of our handsomest ducks—a male Pintail, which species is found in suitable localities throughout North America. Upwards of twenty vernacular names have been bestowed upon the two sexes of



THE MAGNIFICENT PLUMAGE OF THE MALE OF THE WOOD DUCK

FIG. 12—This duck is most frequently seen on the streams running through the timbered districts, and it nests in the hollow trunks of trees.



OUR FAMOUS RED-HEAD

FIG. 13—Red-heads are frequently sold in our market for Canvas-backs, and when the birds are taken on the same feeding-grounds, it is not an easy matter to distinguish the difference in flavor. While it resembles it in plumage, it is a smaller bird than the Canvas-back.

this elegant bird; but I have never heard them called anything but Pintails. In the male the head and upper neck is of a rich brown, beautifully glossed with dark purple, and this shades to green in certain lights. On either side of the neck, as will be seen in the figure, there is a white stripe, carried down to join the white of the breast below. Fine wavy lines cover the gray back crosswise. Upper and lower tail-coverts black. Only the male has the middle, elongate feathers of the tail, and its length greatly varies in different individuals, sometimes attaining a length of at least nine inches. In females and young the plumage is entirely different and very much plainer. In nature, the Pintail in full breeding plumage is one of the most "dressy" ducks that can well be imagined, and of the trimmest and most "clipper-like" build when seen on the water.

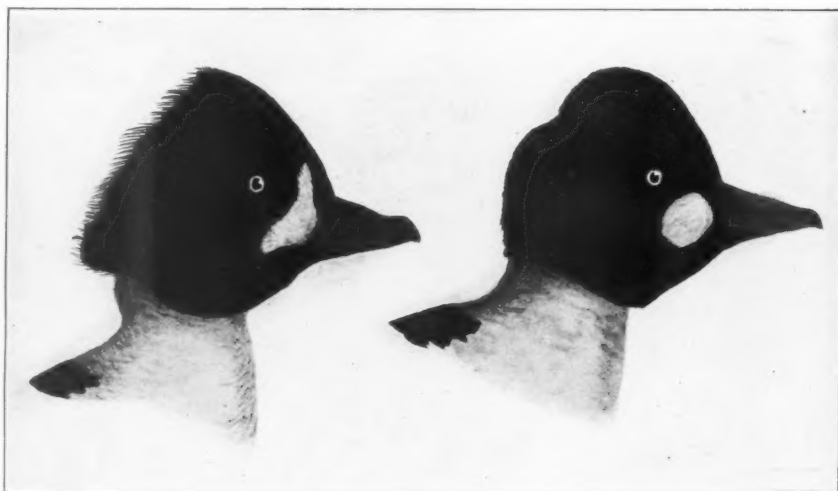
On the sloughs along the Laramie River I have found Pintails associated with Mallards, together with all three species of Teal, Widgeon, Canvas-backs, and other species. They have not a few interesting habits, such as swimming deep, going ashore to hunt for food, and, to quote Audubon, "it is by no means an inexperienced fly-catcher."

There are few handsomer ducks than our well-known Wood Duck—that is, the male of that species when in full plumage (Figure 12). Coues

stated in his "Key" that the Wood or Summer Duck "in confinement or semi-domestication, as the bird is often kept for its beauty, hybridizes freely with various other species, some of a different subfamily. The pernicious spring shooting of the bird on its breeding grounds has made it rare in many places where it was once common." After this authority published that statement, the Wood Duck came within an ace of being utterly exterminated simply to obtain a few special feathers from the sides of the male bird wherewith to make a particular trout-fly for fishermen! Those feathers sold for a very high figure *per ounce*, until the wildfowl protectors took a hand and saved the species. Now, I believe, Wood Ducks are slightly on the increase once more.

Passing to the "Sea Ducks," we have in our bird fauna over twenty different kinds of them, the Pied or Labrador Duck being extinct and the Rufous-crested Duck being a very rare straggler. There is quite an extensive literature on the extinct Pied Duck; and in the days of Audubon and Wilson the bird was more or less abundant on our Atlantic Coast; but neither of these writers even suspected that the species was on the road to utter extinction. Wilson said of it that "this is rather a scarce species on our coasts, and is never met with on fresh-water lakes or rivers." Audubon describes what he took to be the nest of the "Pied Duck"; mentions Daniel Webster as having shot them; describes many he had seen, but left not a word to indicate that he thought they were nearing extermination. Coues gives the date of the extinction of this bird as 1875—"the last known of the species"; and yet he both figures and describes it in the last edition of his "Key to North American Birds" (Vol. ii, 1884, pp. 934, 935). Even as late as 1910 the compilers of the Check-List of North American Birds retained the species among the "Sea Ducks."

The late John Lewis Childs paid \$1,000 for a male



HEADS OF BARROW'S AND THE AMERICAN GOLDEN-EYES

FIG. 14—These figures well show the slight differences sometimes existing between Eastern and Western species of our ducks. It is only well marked in the males of the two species here shown. Copied by the author from cuts given as by Fuertes.

specimen of the Pied Duck to put in his private museum, and he took great pride in showing it to me. He exhibited it under a specially made glass bell in a prominent place. In 1884 two hundred dollars were offered in England for a good pair; and such a pair would now command more than five times that amount.

So much has been published about Canvas-backs and Red-heads—both birds being so famous for the table—that they are merely mentioned here in order to fill out the list and not omit their names. In Figure 13 is presented a particularly fine male of the Red-head, which any duck-hunter in this country can recognize at long range. The Canvas-back is not figured here, but I may have something to say about it later on.

Doctor Stejneger essayed to make a subspecies of the American Scaup Duck, while the late Dr. Elliott Coues pointed out that the bird is "absolutely identical with the European" form.

In the A. O. U. Check-List we find them recognized as the Scaup Duck (*M. marila*) and the Lesser Scaup Duck (*M. affinis*), and both placed in the same genus with the Red-head and Canvas-back.

Three very distinct black and white ducks constitute the genera *Glaugula* and *Charitonetta*, the first containing the American Golden-eye, which has some dozen other common names; Barrow's Golden-eye or Rocky Mountain Garrot, and the second our favorite little Buffle-head, which likewise is called, here and there, by all sorts of stupid names. The female of this species is widely known as the Little Brown Duck, and has the general appearance of being a different species (Figure 7).

The males of the Golden-eye are readily distinguished when in full plumage by the form of the white area between either eye and the bill, it being more or less round



THE SPECTACLED EIDER

FIG. 15—This is one of the handsomest of the group. It is practically confined to Alaska and islands, but is not especially abundant anywhere. Drawn by the author from a specimen in the National Museum.

in the American Golden-eye and triangular in Barrow's. The heads—that is, the black part of the plumage—of all of these ducks (the males) are beautifully glossed with iridescent colors, green being the prevailing tint in the American Golden-eye and purple and violet in Barrow's.

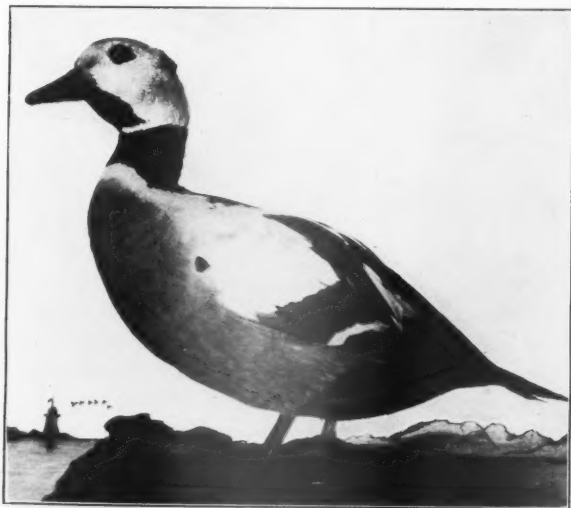
Our American Garrot closely resembles the European form of the species, being merely a trifle bigger. Both are birds of medium size, with, as I say, a black and white plumage, apart from that of the head. Many years ago, when exploring the mysteries of Lake De Smet, in Wyoming, I saw hundreds of many species of ducks associated with Curlew, Avocets, Snipe, Sandhill Cranes, and other water fowl. It was along the shores of that lonely sheet of water that I collected my first specimen of Barrow's Golden-eye.

The nest of a Golden-eye was discovered by Audubon only upon one occasion; but "not being then aware of the necessity of measuring or keeping eggs, I roasted them on some embers, and finding them truly delicious, soon satisfied my hunger. While I was eating them, the bird returned, but no male was to be seen."

This species makes such a noise with its wings when in rapid flight that many gunners call it the "whistler." Often, when shooting on misty days, I have heard the Golden-eyes passing and not seen them at all, the peculiar whistling of their wings being unmistakable.

In the female the head is snuff brown, and there are no white markings in front of the eyes. She is also smaller than the male, and has other good distinguishing characters.

Golden-eyes are handsome ducks; but, as favorites, they cannot compare with our little Buffle-head (*Charitonetta*



ANOTHER HANDSOME EIDER DUCK

FIG. 16—Known as Steller's Eider; it inhabits the circumpolar regions of the Northern Hemisphere. In high northern latitudes it flocks with the other species of Eider Ducks in enormous numbers. It is a very beautiful bird.

albeola, Figure 7), also called by some dozen other names. It, too, is a wonderful diver, being almost the equal of any of our smartest grebes. It ranges over North America at large, and has been collected in the Old World. Buffleheads stand among the handsomest of our small ducks; and, though small, they are often shot for the market.

Although burdened with over twenty vernacular names, our Long-tailed Duck, or Old Squaw, still holds its own in our duck fauna. A picture of one is shown in Figure 9. Off Long Island Sound, shortly after the Civil War, this was one of the most abundant species found in the winter time. I have seen acres of them packed close together and riding on the waves like a great brown and white blanket. They have a peculiar tender way of calling "South-southerly, south-southerly, south-southerly, south-southerly." Now they are rare—and no wonder; for I have seen the "duckers" come up from New York on their ducking sloops, armed with swivel guns, loaded each time with a cupful of double-B's, with which, at each shot, they often killed and wounded simply dozens of those beautiful birds. After getting two or three barrelfuls, they would sail away, to unload at Fulton Market.

One of the world's most wonderful ducks is the Harlequin (Figure 4 and also in circle), which is a Northern bird, occurring in this country, chiefly coastwise, but also in the interior, where it breeds. It is rarely found south of New England on the Atlantic Coast nor at a corresponding latitude on the Western one. The male is a beautiful bird, with a very remarkable plumage for a duck, the female being plain in comparison and considerably smaller.

It requires several seasons for a male Harlequin to attain the full beauty of its plumage; then it has con-

spicuous white markings on the sides of the head and around the neck and chest. The general color is a plumbeous blue, tinged with purplish, and this becomes darker on top of the head than on the body. The median plumage on top of the head is emarginated with chestnut, and it has, upon either wing, a rich, metallic speculum, shading to violet. This bird is also widely known as the Lord (Lady for the female) and the Painted Duck.

Ten white eggs are laid to the clutch, and the ducklings are prettily speckled. The Harlequin is much sought

after for the table wherever found in any numbers. It is a fine swimmer and diver and a bird of powerful flight. Its note, a sort of whistle, is easily recognized by those familiar with it. Our Harlequin is a very shy bird and very vigilant; so few are shot by the gunners. It is frequently seen well out to sea; and, to some extent, it may be considered a marine species.

We have no fewer than six species of Eider ducks in our United States avifauna, and each and all of them

are magnificent examples of the marine bird world. Several of them are figured in the present article, as the King Eider (initial cut, and Fig. 10); Steller's Eider (Fig. 16); Eider in circle on plate; Spectacled Eider (Fig. 15). These are sufficient to illustrate the general appearance and characters of the different genera. The Pacific Eider (*S. v. Nigra*) has, as its scientific name intends to indicate, a black V on its throat; but in other respects it closely resembles the Northern and the American Eider. These are the birds from which the famous eider-down is obtained.

There is a very striking difference in the plumages of the males and the females of this assemblage of birds, the latter being, as a rule, brown, transversely barred with



POOL FOR WILD FOWL IN THE ZOOLOGICAL GARDENS AT WASHINGTON

FIG. 17—Most of the birds seen in this picture are wild geese of several species. There are, however, a number of different kinds of wild ducks in sight. Photograph by the author.

[Continued on Page 60]

The Pennsylvania Alpine Club

By LEWIS EDWIN THEISS

IN writing about the Pennsylvania Alpine Club, it seems particularly appropriate to remark that great oaks from little acorns grow. Being itself but the tiniest sort of an acorn at birth, the Pennsylvania Alpine Club is already in the way of becoming a mighty oak, indeed. While the woodland oaks it was conceived to foster, are fast growing into majestic reaches of forest, akin to that original and indescribably magnificent stand of timber that shall be known through all time as Penn's Woods, or Penn-sylvania.

Nowhere in the world has there ever been, probably, a more glorious growth of forest than the 28,000,000

Penn's matchless timber stands from these hopelessly stricken areas!

With our need of lumber a hundred times greater than it was in the days of William Penn, and our stand of timber in Pennsylvania well-nigh a hundred per cent less than it was then, it is high time that something were done to end this destruction of the forest. The demand for lumber in Pennsylvania—in her great mining industry that alone calls for 500,000,000 feet per annum, and her great steel industries, and her great wood-working industries—is simply enormous; whereas, as a matter of fact, the annual production of lumber within the state is now barely sufficient to make coffins for the dying. Such is the sad condition of the state that for more than thirty years produced more lumber than any other state in the Union—that produced the bulk of the lumber, in fact, used in the East. And yet there are 13,000,000 acres of mountain land in Pennsylvania that are fit for nothing but the production of timber—or rather were fit for nothing else until the hand of man rendered almost half of that area altogether unfit for anything.

The difficulty was not that thoughtful men did not see what was ahead and call a halt, but that public opinion on the matter had not been sufficiently aroused. More correctly, it had not been aroused at all. There was no public opinion on the subject of forest devastation. The general public did not know there was a forest problem. The Pennsylvania Alpine Club is one of the agencies formed to develop public opinion. Or, at least,



ROCKS ON HAYCOCK MOUNTAIN

This rock stands over fifty feet in the air, leaning toward the northwest. When we climbed it we found it really "rocked." Harvey Snyder and J. W. Snyder at the top.

acres of finest timber that gave William Penn's colony its name. Nowhere in the world are there deserts more appalling than the six million acres of denuded forest lands in Pennsylvania that stand today as a living reproach to the human rapacity and greed that mowed down the timber, and the criminal carelessness that caused fire after fire to sweep through the denuded areas, not only burning what was left of the timber, but actually destroying the very soil itself, and rendering it powerless to produce further growths. And only 250 years separate



FORMIDABLE OBSTACLES

The Alpine enthusiasts were not daunted by even such rocks as this, encountered on Mahanoy Mountain.

if it were not organized expressly for that end, that purpose has become a part of its object.

How very small an acorn the Pennsylvania Alpine Club really was at its inception will be gathered from the fact that its original membership totaled six. Colonel Henry W. Shoemaker, member of the Pennsylvania state forestry commission, conceived the idea of such a club. Colonel Shoemaker is much interested in folk-lore, old legends, and the history of the pioneers. One afternoon in the spring of 1915 Colonel Shoemaker was on his way to interview an aged hunter back among the hills of Snyder County, to get from him the story of the last bison hunt in Pennsylvania. With Colonel Shoemaker were George W. Wagenseller, editor and owner of the *Middleburg Post*, and J. Herbert Walker, then editor of the *Lewisburg Journal* and now of the editorial staff of the *Altoona Tribune*. The high point of old Mahanoy Mountain, grim and austere in the fading light, seemed always to be in

sight of the party. The suggestion was made that it would be a fine thing to have an organization to explore the Pennsylvania mountains and climb the higher peaks of the state, to study the flora and the fauna, and to obtain such other data as would help in creating a greater love for the beauties of the state and inculcate a desire for the conservation of the state's natural resources.

Out of that suggestion grew the Pennsylvania Alpine Club, consisting of Colonel Shoemaker, Mr. Walker, Mr. Wagenseller, Edwin Charles, Henry F. Charles and F. C. Betts, and William M. Schnure. From that hexagonal acorn has grown the present club enrollment of more than one thousand members,

with local chapters at Altoona, Williamsport, Doylestown, Loch Haven, Middleburg, Reading and many other cities.

Colonel Shoemaker was elected president and Mr. Walker secretary, and both are still serving in their



LOVELY VIEW FROM THE MOUNTAIN

This is at Peach Bottom, near Furness, Pennsylvania, on the Susquehanna.



A GROUP OF ALPINISTS ON HIGH TOP, SNYDER COUNTY

Bottom row, reading from right to left, first four—Col. Henry W. Shoemaker, president; Henry F. Charles, guide; J. Herbert Walker, secretary, and John H. Chatham, bard of the club.

respective offices. Mr. Walker is also the editor and compiler of the association's year book.

"The Pennsylvania Alpine Club," to quote President Shoemaker, "is more than an idealist's creation; it is a power for good in the spiritual life of Pennsylvania. It was formed with the idea of climbing the highest but especially the lesser known mountain peaks in our state, to popularize the scenery of our mountains, to hammer home the slogan 'See Pennsylvania first,' and to encourage healthful outdoor life. It carries with its plan the study of the historical associations clustered about the mountains, the folk-lore and traditions, as well as the trees, flowers, birds and animals which have formerly and do at the present time inhabit their slopes. It calls for the effort to be made to preserve the natural aspects of the mountains against the vandal ganistermen and the rapacious lumbermen, to preserve the vanishing wild life, the birds and animals, as well as the purity of the streams which flow from these mountains, and above all to use every effort to *prevent forest fires*. Forest fires are the great destroyers of the pristine beauty of the Pennsylvania highlands.



A MAGNIFICENT VIEW

From Mount Riansares, which was climbed by the club last May, looking west into the eastern end of Nittany Valley.



THE "OLD GUARD"

These are the original members of the Pennsylvania Alpine Club on the summit of Mahanoy Mountain. Left to right, top row: G. W. Wagenseller, Henry P. Charles, Col. H. W. Shoemaker, F. C. Betts. Bottom row: W. M. Schnure and Edwin Charles.

They denude the hills of their timber, they drive away and kill the birds and animals, they dry up the springs and streams, they turn fair stretches of scenery into desert wastes, they are the foe of everything that is beautiful and good. The members of the Pennsylvania Alpine Club can prevent forest fires by co-operating with the proper forest officials, but above all, by creating a general sentiment appreciative of natural beauty and economic value to our climate of forests and water supply."

The first mountain ascents were made by the club during the year 1917 and included the climbing of Mahanoy Mountain, in Northumberland County; Mt. Logan, in Clinton County, and Blue Knob, in Bedford County. The next spring Mt. Parnell, in Franklin County, was climbed. Then, on account of the war, there were no more ascents for a time. But in 1919 Red Top, in Centre County, and High Top, in Snyder County, were ascended, and the club visited the tract of virgin timber in Snyder County which has subsequently, and partly through its efforts, been created a monument, under the name of the Snyder-Middlesworth Monument, in memory of two famous Pennsylvanians.

The Snyder-Middlesworth Monument consists of a tract of 250 acres of virgin hemlock forest that was somehow overlooked by the lumbermen, and passed along to the state with some comparatively worthless, cut-over forest lands. In that tract of 250 acres no forest fire has ever burned. No ax has ever rung within its boundaries. Hemlock trees, estimated to be fully 250 years old, and so huge that two men can not span them with their arms, here tower aloft. Four or five of these trees together contain sufficient lumber to build a big house. Here

one can walk through a forest that is exactly like the forest the Indians trod before ever they saw a white man. And in perpetuity the lad who reads of the journeys of the Leatherstocking can go to this sacred precinct and see for himself what the wilderness was like when La Longue, Carabine and Chingachgook trailed the savage catamount or the still more savage Iroquois.

During the years 1920 and 1921 a number of peaks in the central part of the state were climbed, including Mt. Davis, Mt. Riansares, and North Mountain, which was climbed twice. Professor LeRoy Jeffers, secretary of the Associated Mountaineering Clubs of North America, acted as guide in the ascent of Mt. Riansares.

In some respects the Pennsylvania Alpine Club is unique. Dealing as it does with God's outdoors, it has neither dues nor initiation fees. It is a club for all. Every one is welcome to join, and members are elected for life. It is more than one of the forces that are making the world safe for democracy. It is creating democracy itself. Every one enrolled is registered to work for the preservation of Pennsylvania Beautiful, for the protection of God's handiwork, and against the encroachment of greed and commercialism.

"Outwardly," as Mr. Walker has expressed it, "there is little evidence of the work of the club, with the exception of the fact that throughout the state the organization has been able, in a way, to inculcate a spirit of co-operation among lovers of nature in their efforts toward the preservation and conservation of the state's natural resources."

That sounds like very little. Actually it is much. On the very best of authority we have it that only a little leaven leaveneth the whole lump. The Pennsylvania Alpine Club is that little leaven that is helping to make effective a great lump of sentiment hitherto unleavened. Like the dam that gathers and harnesses the previously

wasted energy of the running stream, the Pennsylvania Alpine Club is gathering and harnessing that spiritual power called sentiment—in this case the sentiment for the preservation of Pennsylvania's natural resources.

Starting utterly unheralded, with no blare of trumpets, the Pennsylvania Alpine Club attracted attention by the sheer novelty of its method. An American flag was planted on the summit of Mahanoy Mountain, a few words were spoken. That was all the ceremony attendant upon that first mountain climb. But the newspapers got hold of the matter and interest was at once aroused. Within a few months the original six climbers had grown to number scores. Now the club numbers more than 1,000 and is growing fast. We are told that nothing succeeds like success. It is true. The Pennsylvania Alpine Club is a going concern. It is a success. Persons who might have been slow to join the original half dozen members, for fear of ridicule, are now glad to be identified with an organization that contains scores of prominent men, such as Governor William C. Sproul, Gifford Pinchot, Dr. J. T. Rothrock, Dr. B. H. Warren, Dr. Thomas Montgomery, James Oliver Curwood, Emerson Hough, Enos A. Mills and other well known lovers of the great outdoors.

No one can estimate accurately the value of a work like that of the Pennsylvania Alpine Club because it deals largely with spiritual values. But so much is certain: no one ever ascends a Pennsylvania mountain or visits a Pennsylvania forest park without coming away resolved that the hand of greed shall be stayed and that the wonderful handiwork of God as seen in the woods shall be preserved.

Yet not all of the club's efforts have had to do with the spiritual. The club has a concrete program of accomplishment. It has aided the state forestry department in many ways. It has made an active fight against

[Continued on Page 54]



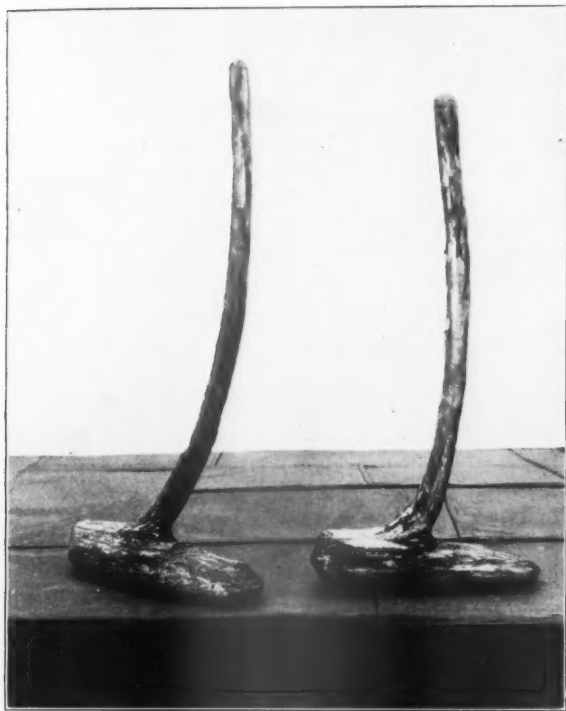
A FEAT TO CLIMB TO THE TOP

This shows Charles F. Cook, of Somerset, getting to the top of "high spot" rock, Mt. Davis.

Then and Now

By JOHN D. GUTHRIE

PROGRESS is mostly a matter of comparison. It is largely by looking back over the trail we have passed, that we realize how much we have gone ahead. Twenty years ago about all the forest ranger got from Uncle Sam was a badge and \$75 per month and a



GRUB HOES OF YEW, MADE BY FOREST RANGERS OF AN EARLIER DAY AND USED FOR FIRE FIGHTING

supply of monthly service report forms. He had no comfortable ranger station; he was lucky if he was furnished a tent; his district was likely to be a half million acres or more. What fire tools he was fortunate enough to have, he had to purchase himself. A forest telephone would have almost scared him to death.

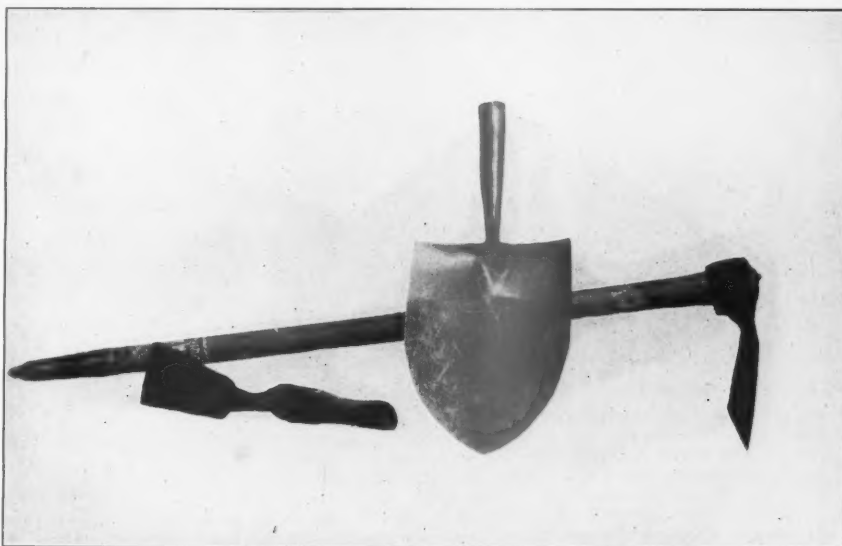
One September day, back in 1903, a forest ranger and his nephew were patrolling a portion of what is now called the Santiam National Forest, in the central Cascade Mountains region of Oregon. These two men discovered a forest fire, small, but woodsmen that they were, they well knew that if not

extinguished at once it might require days and nights of the hardest fighting to put it under control. Tools they had none but their small belt axes. Resourceful, they used what was at hand, and so they felled a nearby Oregon yew tree and from it fashioned a fire-fighting tool that must have been the father of the modern ranger's eye-hoe. These old-time rangers put out the fire, left their hand-wrought tools on the fire line and went on their way, leaving a green mountain side instead of a black one. In September, 1921, 18 years later, C. C. Hall, Forest Supervisor of the Santiam National Forest, found the two yew-wood grub hoes where the rangers had left them when they put out that fire on Owl Ridge in 1903. The rangers were William R. Mealey of Foster, Linn County, Oregon, and his nephew, K. S. Mealey, and I am going to let Mr. Mealey tell the rest of the story:

"It may further interest you to know that the forest rangers were my nephew and myself, and that the Owl Ridge, Swamp Mountain, Two Girl, and Bear Lake country was a part of our work.

"That was quite a while back and conditions were not so handy as they are now. We did not know much about the air patrol, lookout stations equipped with fire finders, telephone systems, and the fine system of trails the government service has established throughout the National Forests in the Santiam region and elsewhere as well. I believe the remains of the fire where the hoes were used still can be found; it was not a large fire, but would doubtless have developed into one had not the 'two unknown rangers' got to it in time.

"In those days, away before the Forest Service built the fine system of trails and telephone lines through the mountains, it was often necessary for rangers to carry



THE MORE MODERN TOOLS OF A FOREST-FIRE PATROLMAN—TAKE-DOWN SHOVEL AND MATTOCK, AND COMBINATION MATTOCK AND AX

their supplies and fire-fighting tools on their backs, often for days, over roughest kind of country. Necessarily we contrived to make our loads as light as possible. Necessity being the mother of invention, we conceived the plan of making our fire-fighting tools where and when we needed them, thus saving the extra labor involved in carrying mattocks with us.

"In fact, it is remarkable how well a digger made from a tough yew tree, the cutting edge hardened in a fire, will do. In almost any ordinary circumstances they are quite as efficient, in the hands of a practiced woodsman, as a mattock. They are light and strong. The handle will not break out and they can be readily sharpened when the edge becomes dulled. Little did we think so many years ago, so far away in the great forest, with so much depending on our individual efforts and with so little to do with, only our belt axes and water sacks and such a relentless foe to contend with, that the relics of the desperate fight for the preservation of the timber lands would one day be brought to the notice of the Forest Service.

"You may well believe me when I say that many a grim battle that has never been heard of has been fought in times past between rangers and the destroying element for the preservation of the forest lands."



THE WAY THE TWIG IS BENT THE TREE INCLINES

Dr. Carl C. Forsaith, New York State College of Forestry, Syracuse University, explains the cause for the peculiar formation of the white oak tree in the accompanying picture. Dr. Forsaith made the photograph recently and states that the tree started from a seedling about seventy years ago and grew in a fence row. It received the peculiar bend shown in the picture through its efforts to escape the obstacle that the fence placed in its way. The tree, therefore, took a horizontal course under the fence until it found the freedom it was seeking and then started upward. The tree is now about two feet through and the horizontal bend about six feet in length. It is located in Auburn, New Hampshire, and is one of the best known trees in that region.

Forest Taxation in Minnesota

[Continued from Page 35]

and is not specifically designated either by the Commission for inclusion within exempted agricultural or commercial zones surrounding settlements or agricultural developments or by its respective owners, who shall declare it their purpose to otherwise utilize it. Conforming with the general tax plan of the State, all taxes will be levied upon assessed value of one-third the true value and will comprise two sorts, an annual bare-land tax and a yield or products tax on the forest products cut.

A unique feature of the plan is the care with which the financial interests of each local community are safeguarded against wide fluctuations in tax income from its forest-producing lands. Thus the annual tax income for the entire district is to be distributed back to the counties, townships, and school districts comprising it, according to the total assessed value of the forest-producing land which each contains. The annual payment to each should vary but little from year to year so long as the total amount of forest-producing land in the district and in the given local tax unit remains approximately the same.

This is particularly so because of the arrangement for collecting the yield taxes through the sale of tax savings certificates to the owners of forest-producing lands. The amount any owner will be expected to take up each year will vary and be graduated according as his forest is a very young one or one nearing maturity. By this means the large payments into the fund, which would otherwise result in wide fluctuation if the yield tax was paid all at once, will be avoided, the final cash payment in most instances being reduced to a relatively insignificant amount.

The promoters of this movement for better forest taxation sought and are receiving the support and co-operation of the State Forester, State Tax Commission, and Federal Forest Service. It is expected also that this plan will be approved and recommended to the next legislature along with other proposed changes in the tax laws by interim committees of both the Minnesota House and Senate, which have been studying the needs for revision of the State's general tax system.

While the Minnesota plan is applicable only to states where classification of property for purposes of ad valorem taxation is permitted by the state's constitution, it nevertheless represents a step forward in the knotty problem of forest taxation.

HOW'S THIS FOR CO-OPERATION?

"Your good letter of December 4, addressed to American Foresters, is received. There are enclosed checks to the amount of \$37.00, together with a list of boosters for the Association. This list, together with two who are already members, comprises 100 per cent of the Timber Section of Internal Revenue."

NOW, DO YOUR PART!

THE BANK OF NATURE



*Will pay you dividends
of real cash for a hundred
years - Read about it!*

A great horticulturist once wrote, "The Bank of Nature is the most substantial financial institution in the world. You cannot shatter its foundations. It lives forever. It never fails. It cannot be destroyed. When you put your money in it, your dividends go on year after year—often interminably.

Why not get your share of Nature's dividends "from the safest, most profitable and lasting of all the industries that spring out of Mother Earth"—the paper shell pecan grove?

Why not grow big delicious pecan nuts on your own pecan orchard in Southwest Georgia, "where the deep rooted pecan tree unlocks the treasure vault of Nature and turns sunshine into dollars?"

Why not establish a new source of revenue that will handsomely reward you, your children and your children's children for generations to come?

An orchard of big pecan trees is something solid, real—not a vague prospect or dream. It is an investment with many remarkable features.

The trees themselves are forest giants. The yield is so prolific that the pecan tree is called "one of the most astonishing food engines in all Nature, yielding literally barrels of nuts." If every big tree produced tons instead of barrels of nuts the **greatly increasing demand** for paper shell pecans would still be unfilled. "We have now one pecan where we ought to have a million," because encased in the perfected paper shell of the pecan Nature has produced the most delicious, most nutritious of all nuts.

What a splendid idea! To have a whole orchard of trees growing these big, fine pecans. To have an increasing supply of them year after year, once your established orchards come into bearing. To receive a dividend check at the end of each year in payment for your nut crop. To know that when you have spent these dividends you were subtracting nothing

Who knows? This step today may have a happier outcome than you may ever dream—for pecan trees become valued friends, even permanent benefactors. Cared for when young—as a result of your slight monthly payments—they care for you and your family later on. Isn't this worth acting on today?

from the ever-increasing value of your orchard.

Here indeed is the ideal savings plan for you. A plan that enables you to invest small savings on a basis so easy you never miss the money. A Co-operative Profit-Sharing Plan by which your orchards are established for you, cared for and cultivated, your nuts gathered and marketed, by practical experts—all without taking a minute of your time from your own line of endeavor.

The many benefits, the exceptionally attractive features of this Co-operative Plan which appeal to every ambitious person, are all explained in a wonderful book entitled

"The Jewel Boxes of Dame Nature"

Send for a copy today. It is one of the most interesting books you ever read. In it are beautiful, inspiring pictures that will portray to you the wonders of pecan growing; and will show why so many people have become interested in the Keystone Pecan Company and their Georgian Prize Pecan Orchards—people like yourself who wish to avoid frivolous investments, making every dollar count big. The pecan orchard puts you on solid basis for future profits upon a liberal profit-sharing system, which is endorsed by bankers and business men of the South.

This booklet is absolutely free, and in no way obligates you. Simply fill out the coupon below—NOW, while a limited allotment of these Georgian Prize Pecan Orchards is being offered at a very low price and on astonishingly easy payment terms—about 17c a day.



This is the book that will tell you in simple language the story of this new and fascinating opportunity.

The big rich pecan—key to this big investment opportunity.



KEYSTONE PECAN CO.
MANHEIM LANCASTER CO., PA.
Reference, Keystone National Bank, Manheim, Pa.

Keystone Pecan Company

Box 422, Manheim, Pennsylvania

Kindly send me booklet, "JEWEL BOXES OF DAME NATURE," containing complete facts about the Georgian Prize Pecan Orchards and your new Small Payment Savings Plan. This does not obligate me. The booklet is entirely free.

NAME _____

STREET _____

CITY _____

STATE _____

Idle Lands in Louisiana

APPROXIMATELY 13,000,000 acres of denuded lands are lying idle in Louisiana," according to Carleton F. Pool, of the State Department of Conservation. "This is about 45 per cent of the entire territory of the State. There are still about four million acres of virgin timber, or about 14 per cent of the entire State area. The only use made of the 13,000,000 acres of denuded land is the grazing of a limited number of cattle, and thus it is producing no revenue of moment. There can be no real measure of prosperity while nearly half of the land of the State is lying idle."

But Louisiana is not conspicuous in this respect. There are in the pine regions of the South over 100,000,000 acres of denuded land lying idle and most of it is unsuited to agriculture. This virgin forest territory has brought vast wealth to the South in the past thirty years. How much, is indicated by the fact that in Louisiana 57 per cent of the industrial labor of the State is engaged in the lumber business, and nearly \$300,000,000 is invested therein. The 87,644,526,000 feet

board measure of timber now standing in the State, according to the estimate of R. D. Forbes, ex-State Forester, and now in the Federal Forest Service, was worth in 1918 \$631,238,916. If the present rate of cutting is to continue, and new growth is not encouraged, in a few years all of these values will be wiped out, the \$350,000 annual severance tax now paid the State will have to be provided from other sources, and the \$125,000,000 of annual revenue from the lumber business will be lost to the State.

This will mean increased taxes on every form of property, the depriving of thousands of persons of their present means of livelihood, an enormous increase in the price of homes, and the injury of farm lands by droughts, which always follow the destruction of forests.

In view of these facts, is not the practice of forestry on an extensive scale worth while? And is not the fact that at present about a quarter of million acres of denuded land are now seeking to enter into contract with the State for reforestation a matter of deep significance?

The Pennsylvania Alpine Club

(Continued from page 50)

the placing of poison in the woods by agents of the state game commission to kill crows and predatory animals. Other creatures as well as the predatory kinds have died by the hundreds from these misdirected efforts. Largely through the work of the club this practice has now been stopped. Many valuable data concerning stream flow and pollution, and methods of conserving fish life, have been collected by the club. An active propaganda has been carried on urging caution with fire in the woods.

As one of the agencies making for the health of the people, the preservation of natural resources, and for real democracy, the Pennsylvania Alpine Club is already a potential force. How great its future influence may become no man can at present truly tell. But it has already become a sturdy sapling and gives every promise of growing into that great oak which traditionally comes from a little acorn.

National Forest Policy

What meaning does that term convey to you?

"Does it suggest woodland depths, tree-fringed skylines, glen and stream, forest excursions, or Christmas trees? If so, well. Well also if it suggests the scars of torch and ax, idle lands, dwindling streams, and other national errors that call for redemption. But does it also bring up pictures of ships at sea, laden trains, busy mills, flashing axes, log-strewn rivers, marvelous machinery—all the kaleidoscopic scenes of perhaps the most picturesque and varied of all men's struggles to make earth yield him the means of life and comfort?

"Even if it does not, as it should, suggest any

of these true and intimate pictures, yet some day, in some fashion, you shall hear forest voices as truly as though you were with Robin Hood and his merry men in the green aisles of Sherwood."

These short paragraphs are taken from Mr. E. T. Allen's article, "America's Transition from Old Forests to New," which will begin in the February number of **AMERICAN FORESTRY**. They are expressive of the human and entertaining style in which Mr. Allen has handled a big subject. This is one of the most interesting and informative articles which has appeared in **AMERICAN FORESTRY** for many months. Do not miss it.



The crate on the left was designed by a Weyerhaeuser engineer to replace the one shown on the right. The diagonal bracing and 3-way corners make a strong, rigid crate that absorbs the bumps and keeps the strain off the contents.

Internal bracing holds the contents in place. Liberal use of resawed lumber for sheathing affords ample protection against damage from the outside. The dealer will receive unmarred merchandise.

Curiously enough the new crate shows a number of savings over the old one. This new crate is made up in sections on jigs. It is delivered to the packer in sections. He is not required to do any cutting or fitting.

An instance of what Weyerhaeuser Crating Engineers are doing for shippers every day.



This Crating Service May Do as Much for You

AS an example of the kind of thing that is making business officials sit up and look to their packing, consider the crates pictured above.

The crate on the left was designed for a manufacturer of washing machines by a Weyerhaeuser Crating Engineer.

It takes the place of the crate on the right which used over 11 feet more of lumber. It is stronger in every way—a reliable protector of its contents.

It is 39 pounds lighter. A saving in freight alone that amounts to 3900 pounds per car shipment. No mean item in these days of high freight rates.

Furthermore it represents a saving in labor costs. This new crate is put together in half the time required to make the old crate.

ANY business man who looks into Weyerhaeuser scientific crating is liable to find himself dealing with *big-figure savings*. But the greatest thing this service does is to insure the delivery of merchandise in perfect condition.

As a result the shipper's customers are pleased. It is service that they recognize and appreciate. Dealers have tired of the damage claim nuisance. They want goods fit to go direct to the salesroom.

Shippers who have adopted scientific crating report other advantages and savings. It speeds up collections, decreases sales resistance and gives to their salesmen a new selling tool. Safe packing builds good will.

THE services of the Weyerhaeuser Crating Engineers are offered to the executives of business concerns—by appointment on request.

There is no charge for this service. This organization feels that the position of lumber as the standard material for shipping containers imposes the obligation to deliver 100% value with every foot of lumber we sell.

For crating purposes, this organization supplies from its fifteen distributing points, ten different kinds of lumber, of uniform quality and in quantities ample for any shipper's needs.

A booklet, "Better Crating," which outlines the principles of crate construction and explains the personal service of Weyerhaeuser engineers, will be sent on request to any manufacturer who uses crating lumber.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 South La Salle Street, Chicago; 220 Broadway, New York; Lexington Building, Baltimore; and 4th and Robert Streets, St. Paul; and with representatives throughout the country.



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Producers for industry of pattern and flask lumber, factory grades for remanufacturing, lumber for boxing and crating, structural timbers for industrial building. And each of these items in the species and type of wood best suited for the purpose.



The Regeneration of the Highlands

[Continued from Page 25]

70 years. At present the land fetches a rent of not more than 6d. an acre for sheep. The annual produce of each acre is only 3 pounds to 4 pounds of mutton, and 4 pounds to 5 pounds of wool, or a few haunches of venison. Each acre is capable of producing from 2 to 3 tons of timber per annum.

"Can we grow timber in Scotland that will compete with foreign timber? Here is the answer ready to hand. (We were passing through Invergarry at the moment.) Here is a small wood of some 30 acres of spruce which was planted by Mrs. Ellice, the proprietor, about 43 years ago. It has the biggest yield per acre of any forest in Europe. We have taken the measurements carefully, and we find it contains 10,000 cubic feet of timber per acre. This is a record. It is nearly 2,000 cubic feet above the highest previously recorded figures for Europe. The present value of this timber is £200 per acre, or an average of £6 per annum per acre for 43 years."

TIMBER A PROFITABLE CROP

In this neighborhood the Forestry Commission has acquired, by feuing, over 9,000 acres of land suitable for immediate planting, at an annual feu-duty ranging from 1s. 8d. to 2s. 8d. per acre. Up to a rental of 3s. an acre, with average returns, timber is a profitable crop. Of this land, over 1,000 acres have already been planted, chiefly with spruce. There are 130,000,000 seedlings and saplings in the nurseries. The heavy rainfall and the excessive moisture is specially conducive to the rapid growth of spruce, as the example already quoted testifies, and it is proposed to put almost the whole of this land under spruce. In thirty years' time the first crop should be ready for pulping for paper making. The minimum forest unit which is required to keep one pulp mill in full and regular employment is 4,000 acres. When this area is full bearing it should be capable of supporting two pulp mills. If the Commission is enabled to carry out its plans the first pulp mill should be established in thirty years, the forest industries should commence, and the forest should take its full place in the life of the people.

"Every 100 acres planted," said Lord Lovat, "will give regular employment to one man. If this same land were under sheep, a single shepherd would be quite sufficient to look after 2,000 acres. That is to say, the whole of these 9,000 acres planted with trees would give permanent employment to 90 men, as compared with five men who would be all that would be required to look after sheep on the same land. Forestry from the commencement gives employment to twenty times as many people as

sheep farming. But that is only the beginning. As soon as the forest reaches the productive stage—when thinning commences—the number of people employed will be doubled. Even that is not all. When the forest industries are established in full working order, the number of people employed in and about the forest and its subsidiary industries will be doubled again. So that the 9,000 acres will give employment to from 300 to 400 people, instead of the original five shepherds.

"Many of these men will be permanently employed full time. Others will be employed during the winter months only for half the year. For them small holdings will be provided, and the winter is exactly the time when small holders have practically no work to do on their own land. They would work all summer on their crofts and all winter in the forest. In addition to their pay, the increased population would afford them a better market for their produce. For the small holder this means all the difference between prosperity and penury.

"If only the land reformers of the Highlands," added Lord Lovat, "knew these facts and appreciated their significance for Scotland, they would become the most enthusiastic advocates of afforestation."

DEVELOPMENT OF LATENT RESOURCES

The Forestry Commissioners have already acquired in Scotland 60,000 acres by feuing and 30,000 acres by purchase. The average rate of feu-duty is 1s. 4d. per acre, and the average purchase price is 24s. per acre. In the development of the latent resources of this land lie the strongest hopes for the regeneration of the Highlands. All this work was threatened with extinction by the report of the Geddes Committee. The government, with a full sense of its responsibility, decided to continue it for another year with somewhat curtailed resources. But it only lives from year to year, and forestry requires long views. Money spent on forestry is not squandered. It represents a system of national thrift, investment, and development.

GEORGIA ASSOCIATION CAMPAIGNS

The Georgia Forestry Association is mustering its members for an aggressive campaign against the forest-fire evil in Georgia. A long period of extreme dryness this fall, accompanied by a heavy crop of leaves which fell before the heavy frosts came, combined to make one of the worst fire seasons in recent years. Heavy damages resulted from forest fires throughout northern Georgia. Many of these fires are due not only to carelessness and incendiarism but also to a lack of interest and to an indifferent public sentiment throughout the State.

"During the winter months of last year, the Association is reminding the people of

Georgia the repeated burnings and timber loss in southern Georgia brought on a continual pillar of cloud by day and a torch-like procession by night which any thinking citizen should have been heartsick to see."

Announcement has just been made to the effect that the Association has secured the services of Mr. Thomas W. Alexander, of Atlanta, to have charge of the Association headquarters. Mr. Alexander is a forester from the State University of Georgia and has already begun the formation of forest clubs throughout the State as one step of crystallizing public sentiment against the forest-fire evil of Georgia.

EFFECTS OF FOREST FIRES ON FISH

In 1900 Slippery Brook, a tributary of the Saco River, Chatham, New Hampshire, offered excellent trout fishing. During May, 1903, a forest fire started in the brush that had resulted from extensive cutting operations and burned over three thousand acres of the brook watershed. Owing to the large amount of brush scattered through the remaining growth, the fire was very intense and burned into the heavy duff soil, creating much ash. Following the fire there were two days of heavy rain. After this rain large numbers of dead fish were noticed along the stream. It is presumed that the large amount of ash carried into the water filled the stream with alkaline silt, which killed the fish. No observations were made to ascertain the presence of dead fish resulting from the high temperatures of the water at the time the fire occurred. In this case, as in most others, valuable information is wanting from lack of observation. Although the fishing conditions have improved since the destructive effects of this fire on Slippery Brook, the improvement has not been sufficient to bring the stream back to the condition existing prior to the fire.

An interesting letter was received from a writer in Louisiana advising as to the effects of forest fires on fish. It appears that one of the large cypress lakes was partly dried up during the long-continued drought during the summer. A fire started in the upper end of the lake and burned the leaves, timber, and other debris in the bottom, and in some places made holes three and four feet in depth. The fire raged for several weeks until all the vegetable matter and growing trees at the upper end of the lake were destroyed. Later on rains fell and the lake arose to about normal level. The ash was held in suspension and caused the death of a large number of fish. It is very probable that this lake will be unsuited to the propagation of fish for some time. It will be necessary for the ash to settle and become coated with silt and mud before a new plant or vegetable growth will develop.

America's Transition from Old Forests to New

By E. T. ALLEN

An economic story, rich in sentimental and historical treatment, of the surging struggle into which the American people are being swiftly drawn by the compelling exigency of providing new forests to replace the magnificent old growth which we have used with lavish and thoughtless disregard of the morrow.

It will begin in the February number
of
AMERICAN FORESTRY

For twenty-five years Mr. Allen has been studying our forest problems from the viewpoint of the forester, the lumberman, and the public. Few, if any men, have had a better opportunity to master the subject in all its conflicting details. "To discuss it so that the lay citizen may feel that he has a fairly basic grasp of all sides instead of

feeling bewildered by disputing experts," says Mr. Allen, "requires the greatest possible detachment from any particular school, policy, or propaganda. It calls for the most neutral and impartial treatment. Probably no living man can quite reach it, but that is what I have attempted."

And Mr. Allen tells his story in a simple, entertaining and informative way

Announcement was made in the December number of American Forestry that Mr. Allen would contribute for publication in February an article entitled "The Westward Ho of Lumbering." In view of his handling of the subject in a broader and more exhaustive way, the Editor has, with Mr. Allen's consent, changed the title to the more fitting and expressive one which heads this announcement.

The remainder of the series of special articles which are to appear during the year will be published as previously announced. They are:

- "The Passing of the Piney Woods," by R. D. Forbes
- "The Iron Horse of the West," by Bert P. Kirkland
- "The Blazed Trail of Forest Depletion," by Gifford Pinchot
- "The Long Haul from the Woods," by Earl H. Clapp
- "The Farm and the Forest," by Henry S. Graves
- "The Land Cry Against the Forest," by P. S. Lovejoy
- "Wild Followers of the Forest," by Aldo Leopold
- "The Forests of the World," by Raphael Zon
- "The Coming War for Wood," by Howard F. Weiss
- "Balancing the Forest Ledger," by William B. Greeley

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American Forestry Magazine

Washington, D. C.

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SOUTHERN FORESTRY CONGRESS TO MEET

The Fifth Southern Forestry Congress will convene at Montgomery, Alabama, on January 29, 30, and 31, 1923.

"The Fifth Congress," says Mr. W. D. Tyler, President of the Congress, "promises to be the best we have yet held. Montgomery is central to the entire South, not only the piney woods of the Coastal Plain, but the mountain hardwood region as well. Our organization, which first met at Asheville in 1916, under the presidency of Colonel Joseph H. Pratt of North Carolina, is interested in the progress of forestry in every Southern State, from Maryland to Missouri, and from Florida to Texas. The aim of our annual meetings is to bring together once a year the steadily increasing group of professional foresters and conservationists in this region, and the landowners who, also in greatly increased numbers, are beginning to see in reforestation and wise forestry practice one highly promising solution of that great Southern problem—cut-over lands.

"The officers of the Congress feel that the tide of forestry is steadily rising in the South. During the past year Arkansas formed a vigorous forestry association. The Governor of South Carolina recently called a meeting of some of the State's most progressive citizens to discuss with

him a forestry program for his State. Now along comes Alabama. We understand that the incoming administration is pledged to any constructive program of forestry that is satisfactory to the majority of lumbermen of the State, who own the bulk of the land in need of fire protection and reforestation, and that will not add unduly to Alabama's tax burdens. This is fine news, and we know that the testimony brought to the Congress by men of professional standing and broad business connection as to what forestry has done in other States will encourage the people of Alabama to go and do likewise.

WIDESPREAD INTEREST IN RED- WOOD CAMPAIGN

Upon his return from the East, J. D. Grant, of San Francisco, Chairman of the Board of Directors of the Save the Redwoods League, reports that interest in the movement to save California's gigantic trees is steadily increasing among influential people and organizations.

While in New York, J. D. Grant conferred with Madison Grant, author of "The Passing of the Great Race," and one of the pioneers in the Save the Redwoods movement, regarding the plans for carrying on further work of the League.

"There are indications of constantly in-

creasing interest in the movement throughout the East," said Mr. Grant.

"Continued publicity is being given to our attempts to save the redwoods through metropolitan newspapers and magazines with large national circulation. We have secured the unanimous support of conservation societies throughout the nation, as well as the various automobile and tourist associations. People are awakening to a realization that California Redwoods, one of the marvels of the world, must be saved now or perish for all time."

NEW BIRD RESERVATION ESTABLISHED

A 40-acre tract adjoining the elk refuge near Jackson, Wyoming, has been established as a new national bird reservation by Executive order. It will be known as the Flat Creek Reservation, and will serve throughout the year as a breeding and resting place for the wild fowl and other birds of the region. Late in fall and in winter it will serve another purpose in affording additional pasturage to the elk herds coming down from the mountains in and about the Yellowstone National Park to winter in the Jackson Hole region. Both the elk refuge and the Flat Creek Reservation are under the jurisdiction of the Biological Survey of the United States Department of Agriculture.

THE NATIONAL FORESTS OF NEW MEXICO

An illustrated booklet, entitled *The National Forests of New Mexico*, has just been issued by the Forest Service, United States Department of Agriculture. The booklet describes the Federal timber holdings within the State, treats of the recreation attractions of the region, and touches on the archaeological treasures to be found there in the form of the cliff dwellings of a vanished people.

There are now six National Forests in New Mexico, the publication continues, comprising a gross area of about 9,500,000 acres, bearing a timber stand of fifteen billion board feet of saw timber and furnishing range for 178,000 head of cattle and horses and 428,000 sheep. These forests provide a permanent lumber industry for the region, supply material needed in the development of ranches, farms, and cities, and add stability to the live-stock industry.

The largest National Forest in the United States, we are told, is the Datil Forest of Western New Mexico, containing almost 3,000,000 acres. The most extensive archaeological ruins in the country are found on the Santa Fe Forest. Here are the cliff dwellings of a prehistoric-dawn people, the Otowi and Tsankawi ruins, the painted rocks, and stone lions.

FORESTERS MEET WITH EMPIRE STATE ASSOCIATION

Two important resolutions were passed by the joint conference of the seventeenth annual meeting of the Empire State Forest Products Association and the New York Section of the Society of American Foresters held at the New York State College of Forestry, Syracuse University, November 9.

One of these resolutions relates to a declaration of war on beavers and urges that legislation be passed to check the spread of such depredations which are menacing the forests in the northern section of New York State.

The other resolution recommends the establishment of a forest products laboratory in the northeast section of the United States. This plan, it is understood, is favored by the Secretary of Agriculture. The laboratory would be of inestimable value to lumbermen of the New England and Central States as well as to the forestry schools of the East.

A working plan for the management of softwood timber land was discussed. The plan was intended as a co-operative work between foresters and manufacturing interests. It was offered merely as a suggestion and a basis for a beginning.

Leading lumbermen and paper and pulp manufacturers were represented at the meeting. They appointed a committee for the purpose of examining into the practical application of the plan. The committee will report at the next joint meeting of the two organizations. The plan was made for a working period of ten years. The area covered was 6,000 acres. A report was received from the special committee on legislation for additional forest-fire protection. The report carried the idea that more drastic legislation was not needed, but a more efficient enforcement of existing statutes and better education in the need of fire prevention.

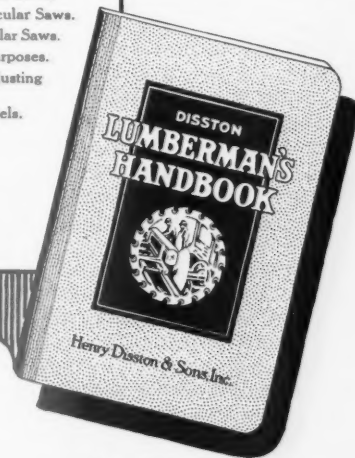
Professor H. C. Belyea, of the New York State College of Forestry, read a paper on the State-wide application of woodlot management, going into the subject in exhaustive detail. The paper was pronounced by those who heard it as the most comprehensive study that has been made on the subject.

INSECT CONTROL IN NORTHWEST

In its insect-control work in the southern Oregon-northern California points (forests of the Northwest) this year, the United States Department of Agriculture treated 69,710 acres; 7,079 trees containing 6,672,490 board feet were felled and the infested bark containing the broods of destructive beetles removed and burned. It is thought that a reduction in the infestation of at least 50 per cent will result.

PARTIAL CONTENTS

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A first-class apple tree for transplanting should have a good root system, top large enough to indicate a good free growth, and should be in good condition. Of course it must be free from injurious insects like scale and aphids and free from diseases such as crown-gall and hairy root.

Size without regard to age is no criterion of value. A tree that takes two years to attain a diameter of $\frac{1}{2}$ inch is obviously not to be compared with the same size one-year tree of the same variety. Varieties differ in growing habits. For instance, a yearling Jonathan with diameter $\frac{7}{16}$ of an inch compares with a Stayman Winesap measuring $\frac{9}{16}$ inch.

We offer exceptionally fine apple trees—two-year-olds whose roots and tops have grown two seasons in our nursery—one-year-olds, budded, whose roots have grown two seasons and tops one season. The latter should not be confused with one-year grafts whose roots and tops have grown only one year.

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Wild Fowl Lore

[Continued from Page 46]

black lines, and mottled in other parts of the plumage. Young birds resemble the female, as a general thing, and the males require time to attain the full feather of the adult birds. Their bills are beautifully tinted with bright color-areas—characters which are lost in museum and other skin specimens. These birds breed from Labrador northward, and, as a rule, line their nests most copiously with down plucked from their own breasts. They generally have some half a dozen eggs to the clutch, of a pale olive color, varying in size according to species.

Audubon's account of the Eider Duck is very full and most interesting. It was being exterminated even in his days; for, in speaking of the "down trade," he states that "the eggers of Labrador usually collect it in considerable quantity, but at the same time make such havoc among the birds, that at no very distant period the traffic must cease."

Then there is that curious little species known as the Masked Duck, a bird of Latin and South America and the West Indies. It happens to be only an occasional straggler in our country, having been shot at various times in widely separated localities in the United States, as on Lake Champlain, New York; Lake Koshkonong, Wisconsin, and once in Massachusetts, near Malden.

Our common Ruddy Duck, known by no less than 57 other vernacular names, many of them fanciful and absurd, is a unique little species occasionally shot on certain lakes in the West. It has a peculiar little spiny tail that holds it erect; and the bird sometimes acts like a grebe, especially when submerging in the water. This bird is hard to kill and very tenacious of life.

Scoter ducks are marine species, and we have four well marked species, namely, the Scoter; the Velvet Scoter; the White-winged Scoter, and the Surf Scoter. For the most part, the bill in the male is highly colored in varying patches; and in this sex, too, the plumage is black, with circumscribed white areas on the head and wings. The females are brown. They are big, heavy ducks of marine types that may be found on inland waters; but they generally flock in salt-water bays and inlets. It is a beautiful sight to see them riding on the billows after a storm. At one time they were very abundant on Long Island Sound, where I collected three of the species. They are known as Sea Coots, Surf Ducks, and Sea Ducks, although they occur inland, and are regular visitors in the winter on the Atlantic and Pacific seaboard; while other species, likewise oceanic, occur in Europe and Asia.



THE MARRIAGE OF THE PINES

Sent to *American Forestry* by an official of the United States Forest Service, the photograph shows a southern yellow pine growing on the holdings of the Pickering Land and Timber Company about 90 miles north of Lake Charles, Louisiana. The tree is about 100 feet high, the lower 20 feet being two separate trees at some early date in its life. The space between the two trees is of sufficient width for a good-sized automobile to drive through.

GREELEY'S ARMY OF 22,000,000

An army of 22,000,000! An army in which every school child in the country has been asked to enlist to combat the national enemy—forest fire.

Chief Forester William B. Greeley of the Forest Service, United States Department of Agriculture, has written the State Superintendent of schools calling attention to the danger from the dry condition of the forest and woodlands in the fall and early winter, seeking to bring before the children the need of care with fire.

According to estimate made by the Forest Service, 33,000 forest fires occur annually; over 60 per cent are caused by human carelessness. Each year these fires burn over 7,500,000 acres, an area greater than Massachusetts, Connecticut, New Hampshire, and Rhode Island combined. Seventeen million dollars of our country's wealth is each year reduced to smoke and gray ashes.

"Can we not," asks Colonel Greeley in his letter, "enlist the school children of the country—there are twenty-two million of them—in an effective army to fight a na-

tional foe that ravages the land before our eyes?

"In your State, and in many others, forest fires are common in the fall. This year drought has made the danger unusually great. Already fires have dealt death and destruction widely in some regions. Your own State will not go unscathed. Rains may diminish the danger, but, even with the most favorable conditions, before snow flies thousands of fires will have run in the forests of the East and North.

"We give too little heed to small fires. They do a vast amount of harm. Our boys and girls should be taught this. They must be made to realize that good citizens are careful not to cause fires.

"The woods are royal playgrounds for young and old. And they are never more so than in the fall. After school, and on holidays, our young people will have glorious times nutting, tramping; some of them hunting in the woods, and frolicking in the fallen leaves.

"The leaves are dry. Sun and wind and frost combine to cover the ground with potential tinder. It does not take long after a rain for the forest floor to become inflammable again. Then a little carelessness or thoughtlessness, and a fire is started.

"I wish I might tell every boy and girl in the United States of the fires that I have seen, and the terrible results of forest fires when they become big, and the harm that even small fires do. I wish I might ask each one of them to promise me his or her help in keeping the forests green.

"I cannot do that, but, with your permission, I can perhaps do something like it. I can ask the teachers in every school in your State who learn of this appeal to let their classes know that the Forester wants the help of all school children and their individual pledge to be careful and to try to get others to be careful to prevent forest fires."

LARGEST FLOWER IN THE WORLD

Can you imagine a blossom as large as a carriage wheel? On the island of Mindanao, one of the Philippine group, such a flower was found by some explorers some years ago. Far up on the mountain of Parag, 2,500 feet above sea level, some explorers were wandering when they came across some buds larger than gigantic cabbage heads. Greatly astonished, they searched farther and presently discovered a full-grown blossom 5-petaled, and 3 feet in diameter. It was carried on low-lying, luxuriant vines. The natives call it "Bolo." It was impossible to preserve it fresh, so they photographed it and kept a few petals to press, and found that a single flower weighed 22 pounds. It was afterwards found to be a species of *Rafflesia*, first found in Sumatra, named after Sir Stamford Raffles. The new flower was called

"*Rafflesia Schadenbergii*," in honor of its discoverer.

The immense flower is composed of five round petals of reddish green color, each measuring a foot across. These are covered with numerous irregular yellowish-white swellings. The reflexed petals surround a cup nearly a foot wide, the margin of which bears the stamens. The cup



of the *Rafflesia* is filled with a fleshy disk, the upper surface of which is covered with projections like miniature cow horns. When free from its contents the cup will hold about twelve pints of fluid. The flower is very thick, the petals being three-quarters of an inch in thickness. Its striking beauty is spoiled by its intolerable odor which pollutes the air for many feet around it. It is also a parasite, growing on low trailing vines which are found in great abundance in tropical forests.—H. E. Zimmerman.

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WOOD USED IN WASHINGTON'S HOME AT MOUNT VERNON

A trip was made to Mount Vernon, Virginia, by W. D. Brush, one of the experts of the United States Forest Service, to determine the kinds of wood entering into the construction of Mount Vernon mansion. This investigation was made at the request of the White Pine Blister Rust Control Office of the Department, since they understood that white pine entered into the exterior construction of the building, and they wished to use the information in connection with their publicity work.

With the exception of several joists under the first floor and the sills which formerly rested on the ground and have since been entirely replaced by brickwork, the timbers are the original ones placed in the house in the period between 1743 and 1774, and are in an excellent state of preservation. Those in the basement are very dark in color, and the surface of the wood has a flaky or crumbly appearance, but seems perfectly sound on the interior. All of the framing timbers seen are evidently red oak, and the large timbers are fastened together by wooden pins. Records show that these red oak timbers were secured on the place, and letters which passed between George Washington and the builders also show that an attempt was made to obtain white oak as its superiority over red oak was appreciated at that time. Evidently the white oak was not so readily available. The adze marks

and often crude hewing of these timbers also testify to their great age.

All of the lath used in the mansion were split or "rived" from red oak timber, which certainly called for great patience on the part of the builders. The lath are about four feet long and are fastened to the studding by hand wrought nails, which are very crude in form and were made at the blacksmith shop on the plantation. The exterior sheathing, interior panelling, floors, stairways, and other finish are southern pine and were also found to be in excellent condition, although some of the original floors are very badly worn. All of the porch work has been replaced several times. The original shingles were cypress, rived from timber secured in the North Carolina swamps. These were replaced last in 1913 by shingles of the same kind.—*Daily News Bulletin, International District.*

OKLAHOMA FOREST LEGISLATION

The legislative program outlined at the last annual meeting of the Oklahoma Forestry Association, provides for specific laws along the following lines:

An Act to create a State Forestry Commission with power to establish a State Forestry Department, to acquire lands for State forests and parks, to have exclusive control and management and provide the necessary funds.

An Act permitting the Federal Govern-

ment to purchase lands under the Weeks Law for a National Forest reserve in Eastern Oklahoma.

An Act to permit any city or town to assume control and management of shade trees on the public streets and assess the initial cost to abutting properties in the manner of other street improvements.

This legislative program will be submitted for final approval at the next annual meeting of the Association, which will be held at Oklahoma City on January 10, 1923.

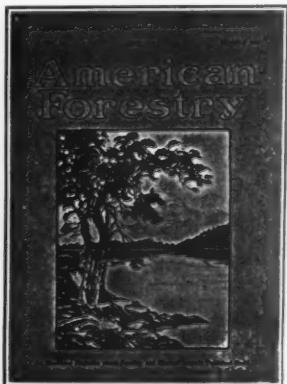
TREE GROWS IN WALL

A freak of nature was revealed at Toccoa, Georgia, when a cotton tree more than eight feet high was found to be growing in the brick wall of the postoffice building. The tree has been there for several years and every one thought its roots got under the wall in some manner and enabled the tree to get moisture from the ground under the building. The contract was let to repair the wall, as it had been standing many years. When the wall was torn down, it was found that the cotton tree, which grew about eight feet above the ground in the brick wall, had never gotten its roots to the ground, but had grown between the tiers of brick and had formed roots some six feet long in the shape of the wall. The mystery is how it obtained enough moisture to grow, when the roots had never touched the ground at any place.

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IDAHO MEN DISCUSS FOREST POLICY

The formulation of an adequate forest policy for Idaho was the object of a preliminary meeting of a committee on forest legislation, held at Boise, November 10 and 11, according to Dean F. G. Miller of the University of Idaho School of Forestry, chairman of the committee.

Mr. Humiston was represented at the meeting by C. S. Chapman, of Portland, forester to the Western Forestry and Conservation Association. Others present and participating in addition to the committee members, were R. H. Rutledge, Ogden, district forester, and George N. Carter, Boise, of the State reclamation service.

"The committee found the present forest law inadequate and out of date, and realized that a greatly enlarged forestry program must be adopted if the industries now dependent upon the forests are to survive," said Dean Miller.

"It was pointed out at the meeting that 40 per cent of the land area of the State is classified as forest land, that lumbering is one of the basic industries of the State, and that if this vast forest area is rightly handled the lumber industry in its present magnitude can be made permanent. But it was also realized that to do this, measures to secure forest renewal must be adopted.

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Four-Year Course, with opportunity to specialize in General Forestry, Logging Engineering and Forest Grazing.

Forest Ranger Course, of high-school grade, covering one year of eight months.

Special Short Course, covering twelve weeks, designed for those who cannot take the time for the fuller courses.

No tuition is charged for any of the above courses, and otherwise expenses are the lowest.

Correspondence Course. A course in Lumber and Its Uses is given by correspondence, for which a nominal charge is made.

For further particulars address

Dean, School of Forestry

University of Idaho

Moscow, - - Idaho

